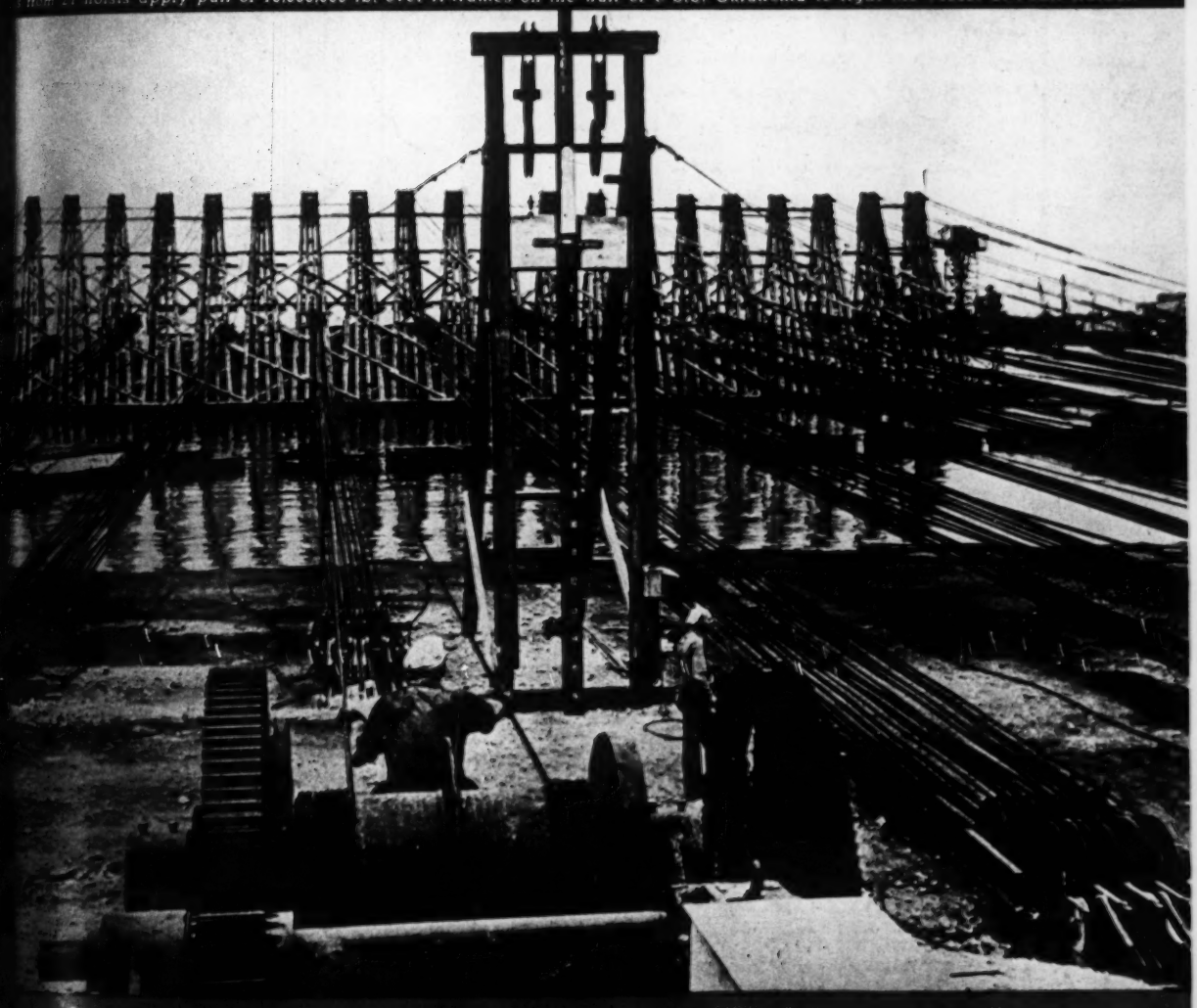
ENGINEERING NEWS-RECORD

NOVEMBER 2, 1944

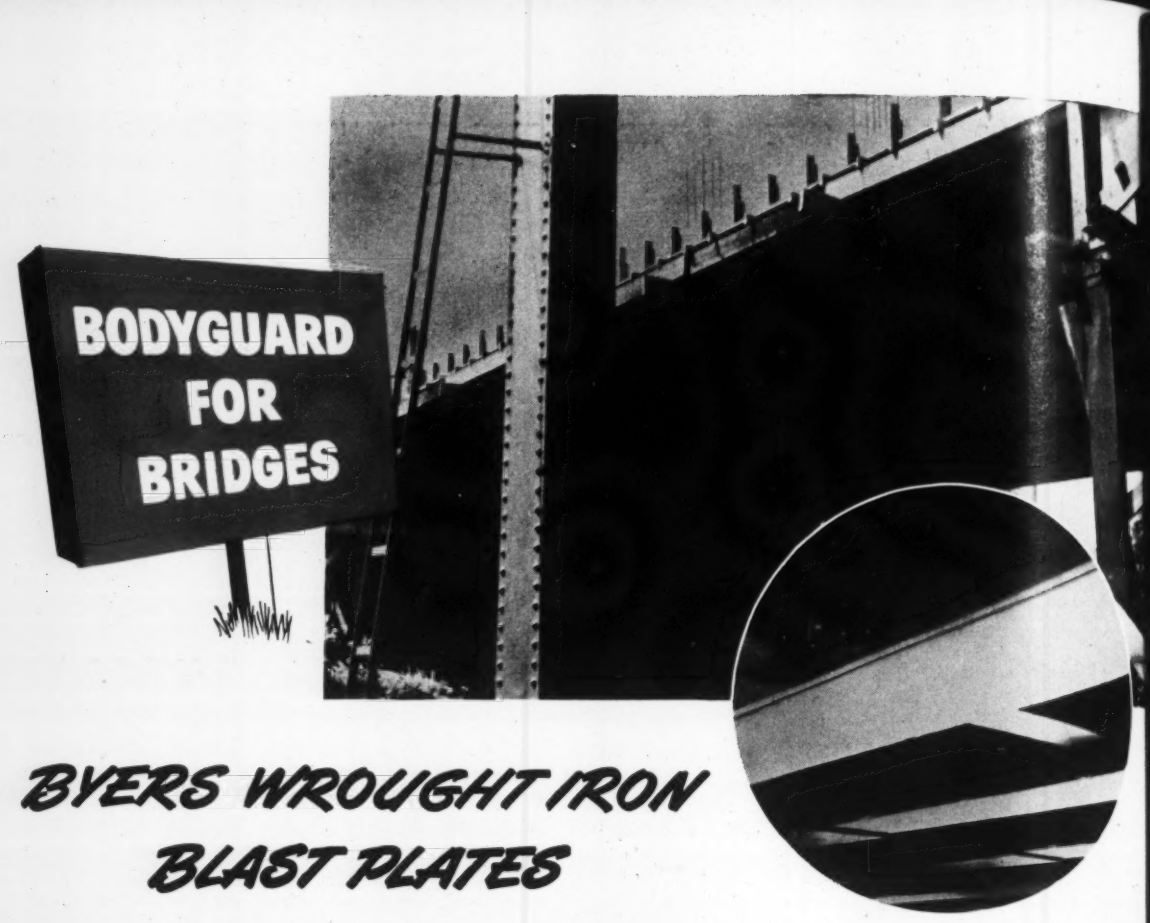
...from 21 hoists apply pull of 18,000,000 lb. over A-frames on the hull of U.S.S. Oklahoma to right the vessel at Pearl Harbor.



This Issue:

AIRFIELDS FOR INVASION OF ITALY

PRICE REGULATIONS IN CONSTRUCTION



BYERS WROUGHT IRON BLAST PLATES

The projected highway program will include a lot of bridges to overpass railroad tracks. How long and how well these bridges serve will be determined by the specifications.

Members on such bridges are exposed to triple-threat conditions, extremely destructive to ordinary structural materials. Condensed moisture from the locomotive exhaust absorbs soluble sulfur compounds and carbon dioxide from the flue gases, and becomes highly corrosive. The extreme variations in temperature resulting when hot gases strike a cold metal surface causes considerable expansion and contraction. And the cinder particles expelled at high velocity, have a sand-blasting effect which tends to scour the surface, and leave it exposed to further corrosive attack.

The time-tried bodyguard under these conditions is Byers Wrought Iron Blast Plates. The illustration shows a recent installation in a bridge at Framingham, Mass, constructed by the Commonwealth of Massachusetts (Department of Public Works). All stringers, diaphragms and brackets are shielded with Byers Wrought Iron.

The classic example of wrought iron's durability in this service is provided by the Oswego Tunnel installation. Records of the railroad showed that the original bottom cover plates, which successfully withstood the blast of corrosive gases for 61 years, were wrought iron.

The reason for this durability is found in the unique character of the material. Tiny fibers of glass-like silica slag are threaded through a matrix of high-purity iron. The fibers are immune to corrosi themselves, and act as baffles halt and diffuse any attack. Furth more, they help to anchor t initial protective film, which shiel the underlying metal.

If you have any overpasses progress or in prospect, you w find some interesting and helpf information in our technical bul tin, "Wrought Iron in Bridge Co struction." We will be glad to se you a complimentary copy.

A. M. Byers Co. Pittsburgh, P Established 1864. Boston, Ne York, Philadelphia, Washingto Chicago, St. Louis, Houston, Seatt San Francisco.

CORROSION COSTS YOU MORE THAN WROUGHT IRO

BYERS
GENUINE WROUGHT IRON
TUBULAR AND HOT ROLLED PRODUCTS
ELECTRIC FURNACE ALLOY STEELS · OPEN HEARTH ALLOY STEELS
CARBON STEEL TUBULAR PRODUCTS

ENGINEERING NEWS-RECORD

Devoted to Buildings, Sewers, Waterworks, Bridges, Roads, Dams, Foundations, Earthwork, Flood Control, Public Works, Shipbuilding, Irrigation, Canals, Railroads

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JOHN ABBINK, *Publisher*

WALDO G. BOWMAN, *Editor* ALBERT E. PAXTON, *Manager*

Vol. 133 NOVEMBER 2, 1944 No. 18

COMING NEXT

• Fontana, the world's fourth highest, as well as the fourth largest dam in concrete volume—2,800,000 cu. yd.—is being carried to completion in just 20 months. This is believed to be a record construction schedule for this type of structure. The achievement was made possible by well defined coordination between design and advanced construction planning—a lesson, which engineers in general and dam builders in particular, will find worth studying. Design features will be described in the Nov. 16 issue.

• Airports of tomorrow must be designed with forethought today, if they are to adequately support the big military, passenger and cargo planes that are on the way now. At least one such airport will soon be completed. San Diego's Lindbergh Field has an 8,500-ft. runway of 12 to 14-in. thick concrete overlaid on a sub-base of sand, topped by a crusher-run course of sand and gravel. Construction methods will be featured in Nov. 16 issue.

• Laminated construction, introduced before Pearl Harbor, seized upon as the answer to the wartime steel shortage problem and likely to be with us for years to come, offers a field for further study. For instance, the controversial issue as to the effectiveness of nailed gluing compared with pressure gluing of laminated beams has been the subject of special test studies just completed by the research staff of the Douglas Fir Plywood Association. The findings of the these tests will be reported in our Nov. 16 issue.

LOOKING AHEAD

• The great mass of aerial reconnaissance pictures compiled by the military forces in this war, their untold value in the art of map making, the experience gained therefrom and the latest developments of superhuman instruments of photography, all go to lend emphasis to the possible use aerial photography will play in the advancement of peacetime mapping. Therefore, "Fundamentals of Photogrammetric Engineering"—a series of articles scheduled for an early issue should prove of unusual interest to the engineering profession.

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CHANGE OF ADDRESS

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Director of Circulation:
Please change my address on Engineering News-Record

From .....

To .....

Signed .....

Hi-Bond

The Reinforcing with Greater Grip

*Note the pattern in the cement**

Ryerson offers a complete construction steel-service . . . designed to meet your every need. Large stocks of over 10,000 different kinds, shapes and sizes of steels are on hand. This includes the new Inland Hi-Bond reinforcing bar and a full line of building steels such as wire mesh, spirals, threaded rods, chimney bands, turnbuckles, Mason Safety Tread, Inland 4-Way Floor Plate, removable metal forms, nuts, bolts, rivets, etc. . . . as well as stainless steel, structurals, sheets, plates, tubing, etc.

Ryerson engineers will cooperate with you on every step from estimates to final delivery. Ryerson facilities enable you to order your steel cut, bent, welded, formed, threaded or otherwise fully prepared for your immediate use. Each lot of steel is tagged for quick and easy assembly on the job. All deliveries are carefully scheduled to keep you supplied with the right steel as the work progresses.

For steel in any form . . . and for practical help on steel problems get in touch with your nearby Ryerson plant. Write for Hi-Bond Bulletin giving data on this new and better bar.

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***NOTE:** The new Inland Hi-Bond bar with its reversed double-helical ribs affords a vastly increased bonding grip between steel and concrete, as demonstrated by the deformation pattern of this bar rolled in wet cement. Hi-Bond keeps pace with the developments in high strength concrete. It makes possible lighter, stronger reinforced concrete construction accompanied by a saving in materials. We will gladly work with you in applying this new bar to your job. Investigate! Call Ryerson.

BACK THE ATTACK...
BUY MORE WAR BONDS

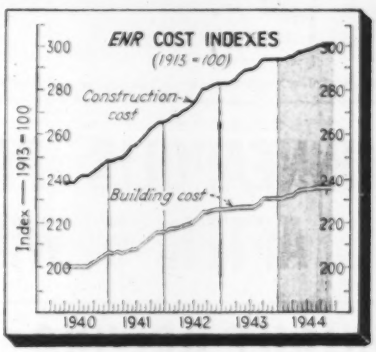
RYERSON

MONTHLY CONSTRUCTION BUSINESS SUMMARY

ENR CONSTRUCTION VOLUME AND NEW PRODUCTIVE CAPITAL

(,000 omitted)	October 1943 (4 wk.)	October 1944 (4 wk.)	% Change	Ten Months 1943 (43 wk.)	Ten Months 1944 (43 wk.)	% Change
Total U. S. Construction	$193,379	$127,195	−34.0	$2,681,752	$1,506,756	−44.0
Private Construction	47,314	22,582	−52.0	376,904	313,849	−17.0
Public Construction	146,065	104,613	−28.0	2,304,848	1,192,907	−48.0
Federal	131,340	81,336	−38.0	2,126,309	978,480	−54.0
Total New Productive Capital	$6,043	$32,868	+444.0	$3,043,250	$1,645,488	−46.0
Private Investment	6,028	32,868	+446.0	123,734	240,748	+95.0
Federal (non-federal work)	15	.....	.....	165,678	140,940	−15.0
Federal (federal work)	.....	.....	.....	2,753,838	1,263,800	−54.0
ENR Construction Volume Index, 1913 = 100	142	91	−36.0	185*	101*	−45.0

*Ten-month average.



CONSTRUCTION COSTS . . . . WAGE RATES . . . . MATERIAL PRICES

	November 1943	November 1944	% Change	Changes October to November 1943 Oct.	1943 Nov.	1943 %	Changes October to November 1944 Oct.	1944 Nov.	1944 %
ENR Construction Cost Index, 1913 = 100‡	294.41	301.09	+2.3	294.31	294.41	†	301.06	301.09	†
ENR Building Cost Index, 1913 = 100‡	231.39	236.10	+2.0	231.29	231.39	†	236.00	236.10	†

‡ Does not reflect increased costs due to overtime, lower labor efficiency, delivery delays, etc.

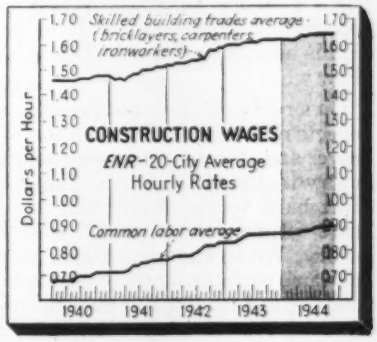
ENR 20-CITIES AVERAGE

Common Labor	$0.869	$0.886	+2.0	$0.869	$0.869	0	$0.886	$0.886	0
Skilled Labor (Av. 3 trades)	1.620	1.641	+1.3	1.620	1.620	0	1.640	1.641	+0.1
Bricklayers	1.715	1.739	+1.4	1.715	1.715	0	1.739	1.739	0
Structural Ironworkers	1.673	1.698	+1.5	1.673	1.673	0	1.694	1.698	+0.2
Carpenters	1.472	1.487	+1.0	1.472	1.472	0	1.487	1.487	0
Cement, per barrel	$2.61	$2.69	+3.1	$2.61	$2.61	0	$2.68	$2.69	+0.4
Reinforcing steel, cwt.	2.79	2.79	0	2.79	2.79	0	2.79	2.79	0
Structural steel, base	2.10	2.10	0	2.10	2.10	0	2.10	2.10	0
Pipe, per ton	1.25	1.25	0	1.24	1.25	+0.8	1.25	1.25	0
Lumber, 2x4 Fir, per M ft.	53.20	54.58	+2.6	53.20	53.20	0	54.58	54.58	0
Lumber, 2x4 Pine, per M ft.	48.78	53.44	+9.6	48.60	48.78	+0.4	53.38	53.44	†
Brick, common, per M	16.20	17.22	+6.3	16.11	16.20	+0.6	16.99	17.22	+1.4
Ready-mixed concrete, c. y.	7.38	7.46	+1.1	7.37	7.38	+0.1	7.45	7.46	+0.1
Struct. clay tile, 3x12x12	79.34	81.30	+2.5	79.34	79.34	0	81.00	81.30	+0.4
Paving asphalt, cars, ton	15.35	15.43	+0.5	15.34	15.35	+0.1	15.40	15.43	+0.2

†Less than .05 percent change.

ENR INDEX NUMBERS

Base = 100	Construction Cost 1913	Construction Cost 1926	Building Cost 1913	Building Cost 1926	Volume '13	Volume '26
Nov., 1944	301.09	144.73	236.10	127.63	...	...
Oct., 1944	301.06	144.72	236.00	127.57	91	40
Sept., 1944	300.46	144.43	236.00	127.57	85	37
Aug., 1944	300.42	144.41	236.09	127.62	121	53
July, 1944	299.94	144.18	235.55	127.33	114	50
June, 1944	298.72	143.59	235.33	127.21	91	40
May, 1944	298.00	143.25	234.80	126.93	100	44
April, 1944	297.70	143.10	234.50	126.76	106	46
Mar., 1944	295.34	141.97	232.32	125.59	103	45
Feb., 1944	295.05	141.83	232.03	125.43	86	38
Jan., 1944	294.57	141.60	231.55	125.17	114	50
Dec., 1943	294.51	141.57	231.49	125.14	103	45
Nov., 1943	294.41	141.52	231.39	125.08	149	65
Oct., 1943	294.31	141.47	231.29	125.03	142	62
1943 (Av.)	289.95	139.38	228.75	123.66	176	77
1942 (Av.)	276.31	132.82	222.39	120.22	553	243
1941 (Av.)	257.84	123.95	211.46	114.32	375	164
1940 (Av.)	241.96	116.31	202.81	109.64	269	118



MATERIAL SHIPMENTS . . . . BUILDING PERMITS

	October 1943	October 1944	% Change	Sept. 1944	% Change Sept.-Oct.
Steel (% operating capacity) A. I. S. I.	101.0	96.2	−4.8	95.2	+1.0

	September 1943	September 1944	% Change	Nine Months 1943	Nine Months 1944	% Change
Fabricated structural steel, tons, A. I. S. C.	51,751	44,871	−63.4	669,369	372,095	−44.3
Cement, thous. bbl., U. S. B. of M.	12,296	10,220	−16.5	102,232	72,096	−29.5
Building permits, 215 cities, Dun & Bradstreet (,000 omitted)	$43,321	$70,503	+62.7	$370,132	$574,231	+55.1

COST OF LIVING INDEXES . . . . . EMPLOYMENT

	September 1943	September 1944	% Change	Aug. 1944	% Change Aug.-Sept.
Cost of Living Index, N. I. C. B.	103.1	105.0	+1.8	105.1	−0.1
Rent (Housing) Index, N. I. C. B.	90.8	90.9	+0.1	90.9	0
Total Employment (est.) thous., B. L. S.	39,678	38,559	−2.8	38,740	−0.5
Constr. Employment (est.) thous., B. L. S.	1,091	679	−37.7	691	−1.7

ENGINEERING CONSTRUCTION CONTRACTS — ENGINEERING NEWS-RECORD — OCTOBER, 1944

Engineering News-Record *reports continental U. S. Construction projects of the following minimum costs—waterworks, excavation, drainage and irrigation,* $15,000 *other public works,* $25,000; *industrial buildings,* $40,000; *other buildings,* $150,000

Four Weeks—Thousands of Dollars (000 Omitted)

	New England	Middle Atlantic	South	Middle West	West of Mississippi	Far West	United States October 1944	United States Ten Months 1944	United States Ten Months 1943	Canada
Public Works										
Waterworks	.....	334	1,480	535	535	311	3,195	27,624	41,608	354
Sewerage	162	491	239	765	732	797	3,186	27,038	34,570	25
Bridges, public	.....	84	328	271	722	1,115	2,520	12,408	18,054	40
Earthwork and waterways	20	117	286	406	3,611	1,040	5,480	59,131	41,734	115
Streets and roads	376	1,632	2,807	1,445	2,479	1,782	10,521	173,359	211,927	259
Buildings, public	1,025	5,028	2,794	2,341	33,000	12,317	56,505	567,430	1,250,668	3,797
Unclassified, public	2,882	3,986	2,337	200	2,138	11,663	23,206	325,917	706,287	576
Total public	**4,465**	**11,672**	**10,271**	**5,963**	**43,217**	**29,025**	**104,613**	**1,192,907**	**2,304,848**	**5,166**
Federal government (included in above classifications)	2,722	7,386	6,833	3,163	36,368	24,864	81,336	978,480	2,126,309	.....
Private										
Bridges, private	.....	103	.....	.....	.....	.....	103	1,460	3,876	.....
Industrial buildings	1,240	2,416	124	4,192	5,621	626	14,219	148,680	144,733	13,081
Commercial buildings	.....	660	2,852	265	1,050	1,491	6,318	120,687	187,981	1,415
Unclassified, private	107	88	46	38	1,001	662	1,942	43,022	40,314	28
Total private	**1,347**	**3,267**	**3,022**	**4,495**	**7,672**	**2,779**	**22,582**	**313,849**	**376,904**	**14,524**
Total Engineering Construction:										
October, 1944 — 4 weeks	**5,812**	**14,939**	**13,293**	**10,458**	**50,889**	**31,804**	**127,195**	.....	.....	**19,690**
September, 1944 — 4 weeks	5,298	13,481	23,388	16,345	25,717	33,690	117,919	.....	.....	8,423
October, 1943 — 4 weeks	9,132	24,653	28,420	34,451	43,161	53,562	193,379	.....	.....	9,170
Ten Months — 1944	**44,763**	**222,623**	**248,484**	**183,202**	**288,572**	**519,112**	.....	**1,506,756**	.....	**99,668**
Ten Months — 1943	127,720	353,485	599,405	323,253	620,239	657,650	.....	.....	2,681,752	105,279

CONCRETE HIGHWAY NEWS

Universal Atlas Cement Company (United States Steel Corporation Subsidiary)
Chrysler Building, New York 17, N. Y.

OFFICES: New York, Chicago, Albany, Boston, Philadelphia, Pittsburgh, Minneapolis, Duluth, Cleveland, St. Louis, Kansas City, Des Moines, Birmingham, Wa

MINNEAPOLIS PAVING PRACTICALLY SCALE-FREE AFTER 5 WINTERS OF SEVERE EXPOSURE

NIGHT DRIVING MADE SAFER

Atlas White Concrete Reflecting Curb most effective when visibility is lowest

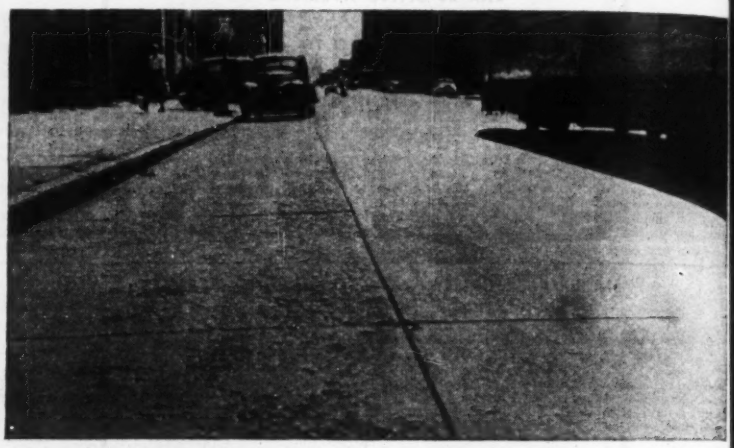
To be clearly visible at night, a curb must not only *reflect* the driver's headlight rays but must reflect them in the *proper direction* —back to the driver. That is why White Concrete Reflecting Curb is made of Atlas White cement and why a saw-tooth design is used. The diagrams below show why.

On a rainy night a smooth curb reflects more light away from the driver and is less visible, whereas a saw-tooth curb reflects more light back to the driver and is more visible. Day or night, wet or dry, White Concrete Reflecting Curb provides a highly visible guide to safety. For full information ask for the book, "A White Guide to Safety." Write to our Atlas White Bureau.

A smooth curb (above) wastes the light from the driver's head-lamps—reflects it up and away from the driver. A White Concrete Reflecting Curb (below) conserves this light—reflects it back to the driver. A smooth curb is barely visible at night; a White Concrete Reflecting Curb stands out bright and clear.

ENR-DC-5

Performance of Atlas Duraplastic* air-entraining cement results in its use for over 2½ million sq. yds. of street, highway and airport paving



Minneapolis street paving, laid in 1939, including car-track paving subject to extremely heavy applications of de-icing salts. Picture taken four years later shows left-hand lane, laid with normal cement, badly scaled, while right-hand lane, laid with Atlas Duraplastic air-entraining cement is practically scale-free.

THE REMARKABLE resistance to freezing and thawing and to the scaling action of salts used for ice removal causes more and more engineers and contractors to specify Atlas Duraplastic, the air-entraining cement originated and developed by Universal Atlas.

Experience in scores of states and cities shows that Atlas Duraplastic:

Requires less mixing water for a given slump;

Minimizes segregation and bleeding;

Makes concrete more workable, more plastic, more cohesive and more durable thoughout;

Produces concrete that spreads, screeds and finishes more easily.

Write to our Technical Service Bureau for further information on Atlas Duraplastic air-entraining cement. Ask for reprints of technical articles on original research and on its use for street, highway and airport paving.

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UNIVERSAL ATLAS CEMENTS

UNIVERSAL PORTLAND • ATLAS PORTLAND • ATLAS WHITE • ATLAS DURAPLASTIC • ATLAS HIGH-EARLY

ENGINEERING NEWS-RECORD • NOVEMBER 2, 1944 • VOLUME 133 • NUMBER 18

Federal water standards scored by engineers

City and state sanitary engineers at California meeting of AWWA oppose rigid requirements and philosophy of revised U. S. Public Health Service standards

Challenging the "idealistic" water quality requirements of the U. S. Public Health Service, Ray F. Goudey, sanitary engineer of the Los Angeles Department of Water and Power, aimed sharp criticism at the revised federal standards of drinking water quality and also declared that greater cooperation should be extended to local waterworks superintendents by both federal and state health regulatory authorities. The occasion was the 25th annual meeting of the California Section, American Water Works Association, which was held in Los Angeles on Oct. 24-26.

Mr. Goudey made his statements in a symposium on the U.S.P.H.S. revised standards. The latter were adopted in 1942 and they have been the subject of much controversy since. Other participants were J. K. Hoskins, assistant surgeon general of the Public Health Service, Washington, D. C., and C. G. Gillespie, chief of the bureau of sanitary engineering, California State Department of Health.

Public Health Service policy

Prior to the scheduled symposium Mr. Hoskins met informally with a group of local and state waterworks men and for two hours discussed the meaning and intent of certain statements in the latest revision. At this meeting as well as in his prepared statement Mr. Hoskins gave assurance that the new standards would be interpreted liberally. "As in previous issues, the standard is not considered as a strict engineering specification", he stated, "but a practical objective to be attained through sustained and cooperative effort on the part of all agencies concerned . . ."

In regard to that section of the standard requiring that all parts of a water system be free from sanitary defects and health hazards, "the obvious intent is to stimulate the elimination of cross-connection and backflow", he said. Waterworks managers have displayed vigorous opposition to this section because it places upon them the responsibility for providing pure water from the source to the very outlet on the consumer's premises. They claim they have no jurisdiction on private premises, and therefore should not be held responsible for conditions, such as plumbing cross-connections, which they are powerless to prevent. "The Public Health Service takes the attitude," said Mr. Hoskins, "that the standard does not apply to the water purveyor but to the product". He argued that the consumer should be protected by the agent having jurisdiction along each section of the water system—water purveyor, health authority, building or plumbing department—and that by cooperative effort of all agents concerned such protection can be assured. The possibility of the purveyor being held liable for damages for cross-connections in buildings over which he has no control was said to be remote.

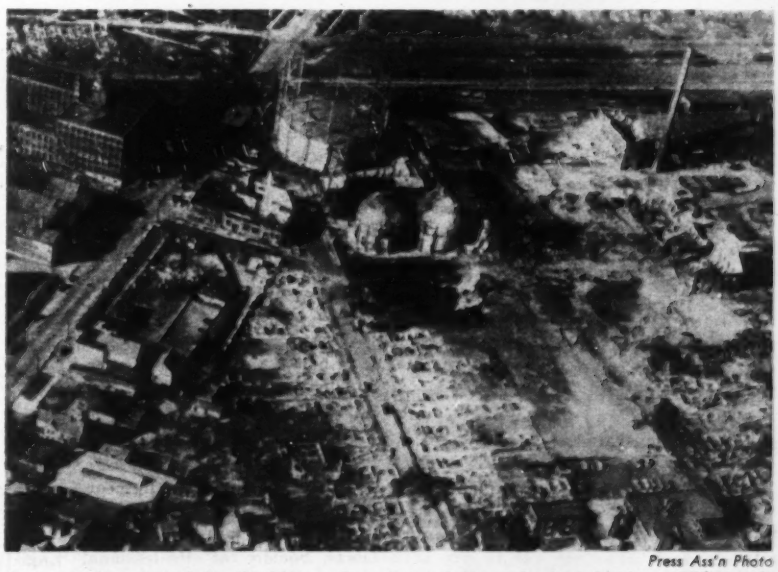
(*Continued on page* 56)

Study Cleveland liquid gas fire

The sad business of totaling up 200 deaths and injuries approaching 1,000 as well as property damage of $7,000,000 being complete, Cleveland last week began probing into the origin and consequences of the liquid gas explosion on Oct. 20 at the plant of the East Ohio Gas Co. which caused it all.

The mayor appointed a committee of ten experts, including George E. Barnes, professor of civil engineering, Case School of Applied Science, to investigate the disaster. The City Planning Commission began discussion as to whether the area, in which 82

(*Continued on page* 58)



Press Ass'n Photo

In area devastated by liquid gas fire, two of the spherical holders still stand.

Russian engineers to buy for Dnieprostroi Dam

Prominent Russian engineers, representing the Soviet government purchasing commission, visited the Pacific Northwest recently to study power installations at Grand Coulee and Bonneville dams. The engineers will purchase equipment for the reconstruction of the huge Dnieprostroi hydroelectric dam, partially destroyed in Russia's scorched earth policy and later blasted by the Nazis.

Guests of John G. Gogins, Spokane, Wash., manager of the General Electric Co., at a dinner in the engineers' honor are, left to right; Mayor F. G. Sutherlin, City of Spokane; N. Shpiakin, Soviet hydraulic engineer, Leningrad; I. S. Locke, International General Electric Co. engineer, Schenectady, N. Y.; Eric A. Johnston, president of the United States Chamber of Commerce; A. R. Kudirsky, Soviet electrical engineer, Leningrad; and, standing, Mr. Gogins.

Pennsylvania road job rushed to completion

Work on the construction of U. S. Route 22, from Progress to Harper's Tavern, Pa.,—said to be this year's largest state highway contract in the United States—is rapidly nearing completion. It is a 16½-mi., 4-lane divided highway which is being rushed through as a war measure essential to national defense.

"From the time the War Production Board approved this construction on April 12, 1944, the project has been proceeding with great speed," says John U. Shroyer, secretary of highways. "Bids were asked on April 27 and 28; on May 3 final certification and approval was received from the WPB; on May 5, the contracts were officially awarded, and within the next two weeks contractors began working.

"The grading and drainage is practically completed and the paving work 70 percent completed. I believe the other 30 percent can be completed in 20 good working days, and the road thrown open to traffic shortly thereafter."

On Oct. 2 permission was given by the WPB to continue the contract from Harper's Tavern to Fredericksburg, a distance of 10.55 miles, to supplement the already record-breaking construction job of 1944.

• • •

S. W. section of A.W.W.A. for state water control

Resolutions endorsing the proposed western states amendments to the omnibus rivers and harbors bill and the flood control bill now pending in Congress were adopted by the Southwest Section, American Water Works Association, at its recent three-day meeting in Austin, Tex.

The amendments seek to retain state control over water resources, the association was told. The delegates also asked that the bills be amended to provide for state regulation of pollution and sanitation on any federally financed inland water project. This was offered by V. M. Ehlers, chief engineer for the Texas State Board of Health.

A. F. Mitchell, president of the Texas Society of Professional Engineers, said that both agriculture and industry within the state need the state control amendments. As an example, he said, Texas rice farmers, who obtain water for irrigation upon application to state officials now, would have to get federal consent if the bills pass in present form.

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Army spends $150,000,000 on plant expansion

Expansion of the rocket and heavy ammunition program of the Ordnance Department has necessitated construction (started Jan. 1944 and to extend into 1945) of additions to existing munitions plants involving $150,000,000, the War Department has announced.

The new construction, authorized by the Construction Division, Office of the Chief of Engineers, is already more than one-third completed. While some of the projects can not be revealed, construction announced is as follows:

Project	Cost
Badger Ordnance Works, Baraboo, Wis.	$29,000,000
Aberdeen Proving Ground, Aberdeen, Md.	3,000,000
Cherokee Ordnance Works, Danville, Pa.	3,000,000
Bluebonnet Ordnance Plant, McGregor, Tex.	3,000,000
Chevrolet Shell Plant, St. Louis, Mo.	3,000,000
Cornhusker Ordnance Plant, Grand Island, Neb.	3,000,000
Como Shell Plant, St. Paul, Minn.	2,000,000
Denver-Kaiser Shell Plant, Denver, Colo.	4,000,000
Elwood Ordnance Plant, Joliet, Ill.	2,000,000
Fontana-Kaiser Plant, Fontana, Calif.	3,000,000
Gopher Ordnance Works, Rosemont, Minn.	6,000,000
Gulf Ordnance Plant, Aberdeen, Miss.	2,000,000
International Harvester Shell Plant, New Brighton, Minn.	3,000,000
Johnstown Shell Forge Plant, Johnstown, Pa.	3,000,000
Louisiana Ordnance Plant, Minden, La.	3,000,000
Morgantown Ordnance Works, Morgantown, W. Va.	3,000,000
New River Ordnance Plant, Pulaski, Va.	2,000,000
Pantex Ordnance Plant, Amarillo, Tex.	6,000,000
Radford Ordnance Works, Radford, Va.	2,000,000
Signal Battery Project, Milwaukee, Wis.	1,000,000
Sunflower Ordnance Works, Eudora, Kan.	19,000,000
Susquehanna Ordnance Depot, Williamsport, Pa.	3,000,000
U. S. Rubber Co. Project, Lowell, Mass.	2,000,000
Victory Ordnance Plant, Decatur, Ill.	2,000,000
Weldon Spring Ordnance Works, Weldon Springs, Mo.	1,500,000
Western Electric Co. Project, Eau Claire, Wis.	1,000,000

Water and sewage groups report on postwar plans

Opening the second phase of its "Blueprint Now" campaign (*ENR*, Dec. 23, 1943, vol. p. 929), the Committee on Water and Sewage Works Development this week issued the first in a series of bulletins entitled "Blueprint Now—*in action*". The bulletin series will report case histories of water and sewage plans actually ready for use when needed.

The committee is a group representing the New England Water Works Association, The American Water Works Association, the Federation of Sewage Works Associations and the Water and Sewage Mfrs. Association.

Copies of the new bulletins may be obtained from the Committee on Water and Sewage Works Development, Suite 2110, 500 Fifth Ave., New York 18, N. Y.

Water storage begins at Alder Dam, Wash.

Storing of water in Alder Dam, largest single unit of the Tacoma, Wash., $23,000,000 second Nisqually power project, is expected to begin this month following the closing of the structure, it has been announced by Tacoma Utilities Commissioner C. A. Erdahl.

Power from the La Grande unit of the project probably will go on the line Dec. 31. Lining of a 6,500-ft. tunnel from La Grande Dam to La Grande power house, containing a new 40,000 kw. unit and the original 24,000 kw. unit, is under way.

The old La Grande plant was shut down late in October to allow the closing of Alder Dam, located about 1½ miles upstream from La Grande Dam. First concrete for both dams was poured in the fall of 1942.

Salt Lake aqueduct work to be resumed soon

Construction of the large, partially completed aqueduct to carry water from Deer Creek reservoir in Provo County, Utah, to Salt Lake City, will be resumed this month following delays created by material shortages, it has been announced by Salt Lake City Metropolitan Water District officials.

With excavation and pipe laying completed for 14,300 ft. of the aqueduct in Utah County, construction to be begun in Salt Lake County calls for installation of about 7½ mi. of low-head, reinforced concrete pipe to Little Cottonwood canyon where a connection will be made with the Salt Lake City water system.

Meanwhile, operations to complete inside caulking of pipe and backfill work in Utah County are under way.

Russian engineers repair war-damaged dam on Dnieper

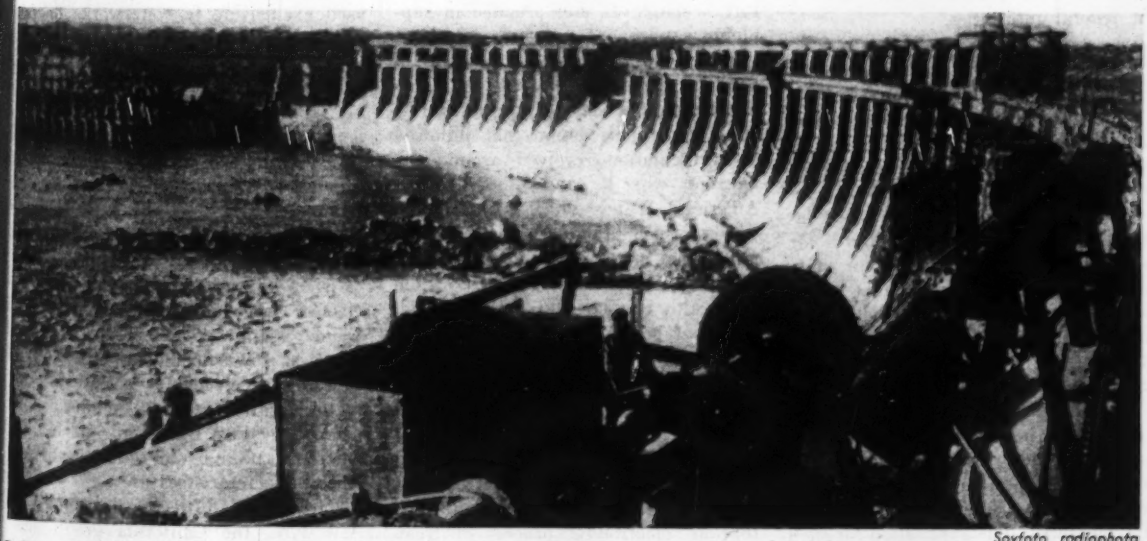
Repair of Dnieprostroi Dam and replacement of the wrecked power plant is now being carried forward actively, according to a report coming from Moscow with the accompanying radiophoto of the dam. Completed in 1932 by Soviet forces under the direction of a small staff of American engineers headed by the late Hugh L. Cooper, the dam was put out of commission in 1941 by the Russians through destruction of the abutments, which released the water in the reservoir in a great flood. As much as possible of the equipment was evacuated then.

When the Germans retreated from the Dnieper River in 1943 they apparently did much more damage, especially to the power plant, the remains of which appear at the left in the picture.

In a recent dispatch to the *New York Times* from Moscow, Wm. H. Lawrence quotes Ivan Kandaloff, engineer at the dam, as stating that the Germans blew up the flood gates and a series of pier, and that they appeared to have concentrated on the power station and its underwater section, which they succeded in restoring to some usefulness.

Mr. Kandaloff stated that the task of reconstruction has been complicated by the need for cutting 10 sluiceways through the dam to lower the reservoir and to carry the flow during reconstruction of destroyed sections of the dam. The flow ranges from 6,300 to 835,000 cfs.

Orders for nine turbines and nine 90,000 kva. generators to replace those destroyed by the Germans have been placed in this country (*ENR*, Oct. 19, vol. p. 462). Both the turbines and the generators for the original power station were built here by the present contractors, the Newport News Shipbuilding & Dry Dock Co., and the General Electric Co.



Sovfoto radiophoto

Dnieprostroy Dam being repaired by Russian engineers. Remains of the powerhouse are at the far ends. From the appearance of the channel in the left foreground, the sluices cut through the dam to lower the water are in the near portion of the structure.

Federal water standards scored by engineers

(*Continued from page* 53)

Many of the questions of interpretation and reasonableness in applying the standards, concluded Mr. Hoskins, are discussed at length in Circular Letter No. 85 of the Surgeon General to state health officers.

State health officers' view

The tasks of the state department of health are so multiplied by the requirements of the revised standards, reported C. G. Gillespie, that the future must be viewed with apprehension. The state agency serves as the reporting authority for the U. S. Public Health Service, and it gathers data, makes analyses and studies of the quality of water supplies furnished to interstate carriers. It is on the basis of these reports that the Public Health Service issues certification of use.

Already four engineers of the California health department, representing half of the sanitary engineering staff, are required for certification activities, and they find it difficult to cope with the work. Certification of supplies for interstate carriers is taking much time and manpower that must be diverted from safeguarding 400 other water supplies in California, and the state health department is just as much interested in the quality of its local supplies as it is in those few that have interstate uses, said Mr. Gillespie.

Furthermore, said he, the state health department prefers to use its own judgment in the evaluation of water quality—and this judgment, based on California experience, may show departures from the rigid standard laid down by the federal authorities.

Who wants higher quality?

With considerable aggressiveness, Mr. Goudey took the stand to argue that the waterworks superintendent is legally and professionally responsible for water quality and that in many respects the superintendent is more interested in higher quality standards for his supply than any federal or state agency. To prove his point that health officials are prone to tolerate deteriorating influences and rule against desired standards, he cited the following occurrences near Los Angeles:

At Bishop, Calif., the sewage disposal farm became waterlogged, and because of the proximity of the land to watershed property a request was made for Lanham Act funds to provide remedial measures. The application for such financial aid was denied by the Public Health Service despite the fact that the Los Angeles water supply needed the protection which an improvement in sewage disposal methods would have afforded.

At the Birmingham hospital grounds the Public Health Service inaugurated mosquito control measures by adding Paris-green to bodies of water draining into the city supply. The city objected but the practice was continued and eventually the ponded water showed an arsenic content of 53 parts per billion. This, said Mr. Goudey, is far beyond the permissible limit specified in the U.S.P.H.S. standards.

Again, at the Jap concentration camp at Manzanar the federal government established a hog farm, the drainage from which goes directly into the Los Angeles aqueduct. Despite protestations by the city the hog farm was permitted to operate by both federal and state health authorities.

And finally, criticized Mr. Goudey, in the matter of cross-connection eliminations in the harbor area from which vital war materials were being shipped, the city got no support from either federal or state health agencies in its efforts to obtain a priority on required valves.

Unattainable standards resented

Waterworks men, said Mr. Goudey, are resentful of regulations that they cannot hope to meet, and while it is gratifying to learn that the new standards will be "liberally" interpreted by federal and state health authorities the fact remains that others may not so construe the situation. In this connection he cited experiences with war agencies, such as those engaged in building and housing projects, which require a signed statement from the water purveyor that he will comply with U.S. P.H.S. standards and practice in supplying service.

Mr. Goudey offered a number of detailed suggestions relating to clarification and revision of the standards. "Cloakroom" discussion that followed his presentation revolved around the question why he and others of the American Water Works Association, who were members of an advisory committee that aided in the formulation of the revised standards for the U. S. Public Health Service—did not clarify all the moot points prior to the adoption of the standards.

Electrolytic water treatment

It was revealed by Lee Streicher, chief chemist of the La Verne softening and filtration unit of the Metropolitan Water District of Southern California, that an electrolytic process of treatment is being studied to provide improved quality of water. He stated that a reduction in anion concentration as well as in hardness-producing constituents is effected by passage of direct current through water, using for this purpose a specially designed unit. No details were given concerning the latter process.

Not only are dissolved solids materially reduced in this treatment, said Mr. Streicher, but the dissolved oxygen is reduced from a value approaching saturation to a point where a beneficial effect on the corrosive tendencies of the water may be anticipated. The investigation is being financed by the district, and the work is being carried out by R. E. Briggs, inventor of the electrolytic treatment omit.

After-dinner speakers

Highlighting the evening meetings were talks by Charles Gilman Hyde, professor emeritus of sanitary engineering at the University of California, and Sam Newkirk, Jr., president of the American Water Works Association and engineer of the Board of Water Commissioners, Elizabeth, N. J.

Professor Hyde, who retired this spring after 39 years of teaching at California, outlined the contributions to better water service made by scientists and engineers from the time of Torricelli in the 17th century to the work of Allen Hazen, George Fuller and George Whipple in recent years.

Mr. Newkirk, in reporting on the present status of the national association, stated that the A.W.W.A. now has a membership of 5,467—an increase of 10 percent since the first of the year and double the number seven years ago. He also revealed that the A.W.W.A. has made application to the Federal Communictions Commission for the assignment of a radio wavelength to be used exclusively in waterworks operation and maintenance service.

New Officers

C. P. Harnish, executive vice-president of the Southern California Water Co., was elected chairman of the section for the coming year to succeed Burton S. Grant of the Los Angeles Department of Water and Power. Carl W. Hoskinson, chief engineer of the division of water, Sacramento, was elected vice-chairman, and Ray F. Goudey, sanitary engineer of the Los Angeles Department of Water and Power, was elected as a national director. Blair Burnson, sanitary engineer of the East Bay Municipal Utility District, Oakland, was re-elected to the office of secretary-treasurer.

Largest of all the local sections of A.W.W.A., the California group now reports a membership of 682. Registration at the conference totalled more than 900.

...rkin of Ft. Peck is now ...e of top S.O.S. generals

... name long on the restricted list ...se of the vital nature of his duties, Gen. Thomas B. Larkin is now re- ...d to be in France, heading the ...y organization of our armies in the ... of that country as Lt. Gen. C. H. ...eads supply in the speech by Lt. Gen. ...on B. Somervell to the *Herald* ...ne Forum in New York, Oct. 16, ... he said, "I would be remiss not to ... the soldiers whose vision, courage ...nergy are primarily responsible for ...mplishing the impossible [in ...ce]. In the south are Generals ...rs, Patch and Larkin; in the west ...erals Eisenhower, Bradley and Lee." ...neral Larkin, most widely remem- ...d for the four years, 1933-1937, ... he was in charge of the building ...e great earth dam on the Missouri ... at Fort Peck, has been overseas ... May, 1942. Immediately after ... Harbor he was called home from ...ma, where for three years he had ... supervising engineer on the Third ...s job, and given an unannounced ...eas assignment. This proved to be ...f of Staff, S.O.S., United States ... Forces in the British Isles. In this ... and later as commander of the ...terranean Base Section, in the ...ning stages of the North African ...ings, he did much to assure the ...ss of that, our first big invasion, ... for it received the Distinguished ...ice Medal, the citation stating also ..."His energy and force did much to ... possible the successful accomplish- ...t of the supply of the U. S. troops, ... thereby contributed in a marked ...ce to the success of the Tunisian ...paign."

...bsequently, General Larkin was ... commanding general, Service of ...ply, North African Theater of Op- ...ions, a position he apparently still ...s. Both the Sicilian and Italian ...sions were supplied by General ...kin's organization, as was the more ...nt invasion of southern France by ... Seventh Army.

... member of the Corps of Engineers ... his graduation from West Point in ..., General Larkin, in addition to his ... at Fort Peck, is also well known ...e construction industry for a two- ... tour of duty as assistant to the ...rict Engineer, Pittsburgh, 1923-25; ...three years, 1925-28, in the office of ... Chief of Engineers; and for four ...s as District Engineer at Vicksburg, ...harge of Mississippi River flood con- ... work there. Gen. Larkin's war ...rd includes service with the Second ...ineers in Mexico and with other en- ...ering units in France from Decem-

Maj. Gen. Thomas B. Larkin

ber, 1917, to July, 1919. Gen. Larkin also served as assistant military attache, American Embassy in Tokyo, for two years, 1921-23.

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Subway system proposed for Washington, D. C.

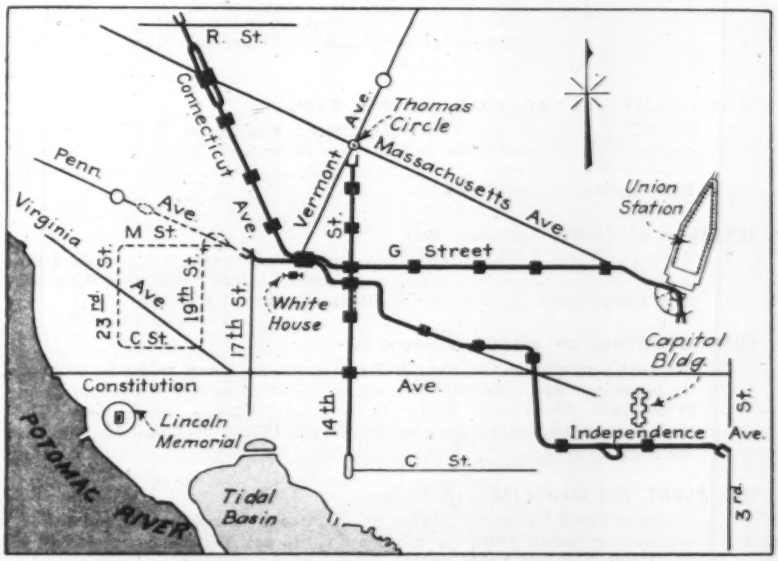
A subway system 7.1 miles long and expected to cost over $56,000,000 has been recommended for Washington, D. C., by J. E. Grenier Co., Baltimore, Md., and De Leuw, Cather & Co., Chicago, Ill., consulting engineers engaged seven months ago to study the transportation problems of the District of Columbia. Single trolley cars of the type used at present on the surface tracks of the city would be used, and connections would be provided between the underground and surface tracks, the trolleys simply going underground when using the subway lines.

An accompanying drawing shows the layout of the proposed system. It would include a 3.1-mi. line running from Union Station to R St., N.W., north of Dupont Circle, a 2.7-mi. section along Pennsylvania Ave. connecting the Capitol with the White House, and 1.3-mi. line running along 14th St. N.W., from C St. S.W., to Thomas Circle.

Stations would be located about every three blocks along the lines. Transfers would be allowed between all three sections. The planned subway schedule provides for an average speed of 16 mph. This rate is expected to result in a time saving in the rush-hour period of 50 to 75 percent, based on a June, 1942, survey.

The proposed subways, for which financing plans are not complete, are part of a large number of transportation improvements recommended by the consulting engineers for Washington. Other proposed construction includes: (1) an inner and outer system of belt expressways, (2) grade separations at several key intersections; and (3) modernization of the city's system of traffic signals. The consultants saw a large drop in property values in downtown Washington if the transportation facilities of the city are not improved.

For the District of Columbia H. C. Whitehurst is director of highways. His office arranged for the transportation study to be made.



Subway system proposed for Washington would provide three sections, indicated by heavy lines and for future extensions shown by dotted lines.

Causes of Cleveland gas fire being investigated

(*Continued from page* 53)

homes were completely destroyed, should be allowed to continue its mixed residential and industrial character. And legislation was being proposed to prohibit liquid gas storage within the city limits.

Many and serious problems awaited decision, and it was foreseen that the answer might affect other cities as well as Cleveland, since storage of gas as a liquid is an industrial development of much promise, which informed authorities do not believe a single failure will halt. The Cleveland installation, first in the country, was completed in 1941.

Liquid gas not explosive

Pending the outcome of the investigating committee's studies, little information is available bearing on the cause of the disaster. The liquid gas of itself is not explosive, and its vapor pressure is said to be small. Normal operation of the plant required the use of steam to raise the temperature of the liquid and thus turn it back into a gas for use in the mains.

In the accompanying illustration, foundations of the two liquid gas storage tanks where the disaster presumably originated may be seen immediately to the right of the two spheroidal liquid storage tanks that were not damaged. Directly behind the two standing spheres are the cooling towers and other facilities used to change the natural gas (stored in the water-sealed holder in the background) into a liquid having a temperature of —258 deg. F. What looks like a large hole in the ground to the right of the cooling towers is the well of an old gasholder into which any surplus from the liquid gas tanks was supposed to drain and from which it counld then evaporate harmlessly into the air.

One of the destroyed tanks was a duplicate of these spheres, while the other was of ordinary flat bottom cylindrical shape, added to the plant in 1942 to take care of increased industrial demand for gas. Both tanks had an inner and outer shell separated by thick insulation. In the spherical tanks the outer shell diameter is 63 ft. and the inner 57 ft., providing for the storage of something over 95,000 cu. ft. of liquid gas. Vaporized into a gas, this expands 600 times to provide 57,000,000 cu. ft.

Thus one great advantage of the system was a minimum of storage for a maximum of gas; another was that the gas could be stored in off-peak months for winter use.

Revised tunnel plan for midtown New York

A midtown vehicle tunnel under Manhattan to connect the Lincoln Tunnel under the Hudson River with the Queens-Midtown Tunnel under East River has passed the preliminary planning stage and is ready for detailed design as postwar work if means can be found to finance its estimated $75,000,000 cost. The project will provide a two-lane expressway eastbound under 36th St., two express lanes westbound under 38th St., and local lanes under 37th St. The Lincoln and Queens-Midtown tunnels were planned with this crosstown connection in view as a dominant feature. Original plans were for only two lanes each way.

The passages will be 80 ft. below street; the great depth being necessary to pass under the several existing subway tunnels. At that level the tunnels will be below all other structures and will be through Manhattan schist where little difficulty is expected in excavation and no underpinning is expected to be required.

Underground terminal

An underground terminal between Fifth and Sixth avenues and 36th and 38th streets will serve the local lanes and permit discharge of bus and taxi passengers who may then take elevators to the surface. A semi-public organization, The Sixth Avenue Association, Inc., has plans for an air terminal building over the underground passage. The structure would front 200 ft. on Sixth Avenue and extend 400 ft. toward Fifth Avenue. Its roof would be suitable for helicopters and direct connection by frequent busses would be maintained to LaGuardia and the new Idlewild airport now being constructed on Long Island.

Preliminary plans have been made jointly by the office of the President of the Borough of Manhattan and the New York City Tunnel Authority. Financing still is in a nebulous state. Tolls can be expected to pay part of the cost. Underground bus operation in the tunnel will bring in revenue. The buses are proposed to carry passengers to the midtown terminal, from a depot for unloading buses to be built on the west side of Manhattan, and from a parking garage near the portal of the Queens Midtown Tunnel. The airlines have outgrown their 42nd St. terminal and proposed expansion makes it desirable to find much larger quarters with direct high-way access to the airfields.

Thus, airlines may be expected to participate in providing a terminal and a terminal building, estimated to cost $35,000,000 of the $75,000,000 total.

JOBS OF THE WEEK

PIER CONSTRUCTION, Hunters Point, Calif.

Bureau of Yards & Docks, Navy Department, Washington, D. C., awarded a contract for pier construction at Navy Drydocks, to Gerwick, Morrison-Knudsen & Twaits, San Francisco, Calif. at $1,676,965.

STOREHOUSES and FACILITIES, Stockton, Calif.

Bureau of Yards & Docks, Navy Department, Washington, D. C., awarded a contract to build storehouses and facilities at Stockton Annex, Naval Storage Depot, to Ford J. Twaits Co., Morrison-Knudsen Co., Inc., and Ben C. Gerwick, Inc., Los Angeles at $10,395,189.

RESEARCH BUILDING, Bethesda, Md.

Bureau of Yards & Docks, Navy Department, Washington, D. C., received the lowest bid for constructing research and animal house at Naval Medical Center, from Consolidated Engineering Co., Baltimore, Md., at $959,000.

SUPERSTRUCTURE OF BRIDGE, Chester, Ill.

Massman Construction Co., Kansas City, Mo., was the lowest bidder for building the highway bridge, including replacing two 670-ft. spans over Mississippi River, at $656,000. The Chester Bridge Commissioner, Chester, opened bids. The work is to repair tornado damage. Sverdrup & Parcel, St. Louis, Mo., are the engineers.

TIRE PLANT, Des Moines, Ia.

Firestone Tire & Rubber Co., Akron, O., awarded a contract for 1, 2 and 3-story, tire plant to George Sollitt Construction Co., Chicago, Ill. The estimated cost is $1,700,000. Giffels & Vallet, Detroit, Mich., are the engineers and architects.

Note—Additional bidding and contract news on many projects large and small appear in the Construction News section beginning on page 149.

OBITUARY

Frederick Tench, 82, a self-taught ructural engineer, died at White ains, N. Y., Oct. 26. Mr. Tench s the president of Terry & Tench, w York, a firm that built the ar Mountain Bridge across the Hud- River and the frameworks of the and Central Terminal, the Biltmore tel, the Sherry Building on Fifth enue and several portions of the Wil- nsburg and Manhattan Bridges in w York. Mr. Tench and associates held steel erection contract on Broadway, Sixth and Eighth Avenue way lines. When the Lincoln Me- rial in Washington began to settle evenly Mr. Tench was consulted and ised a means of shoring the founda- n to restore the original levels. With Edward Terry, who died in 1927, built a number of bridges across the ssissippi and Missouri rivers and else- ere in the midwest. Opening offices in w York in 1899, their first large con- ct was for the Harlem River draw- dge that is still in operation.

Ralph Lambert Warren, 70, a founder d a member of the board of directors the Warren Brothers Co., one of the gest highway engineering and road- lding firms in the country for the thirty years, died Oct. 27 at West wton, Mass. Mr. Warren was a grad- e of the University of Pennsylvania 1896.

Niel F. Blair, 63, long active in the struction field, died Oct. 24 at Cleve- d, Ohio. Recently he had been an ineer with the Public Works Ad- istration, the Federal Works Agency the Defense Plant Corp.

Lawrence T. Johnson, 63, a city en- eer for Los Angeles, Calif., for 25 rs, died Oct. 16.

Darwin Schuetz, 64, Seattle, Wash., l engineer who was engaged on struction of the Lake Washington ting bridge, died Oct. 23. Mr. uetz was a graduate of the Univer- of Minnesota.

David Wilson Glass, Sr., 56, project ineer for the National Housing ncy, died in Baltimore, Md., Oct. 24. received his civil engineer degree at Maryland Agricultural College in 1. He was employed by the Mary- d State Roads Commission but trans- ed to the Baltimore Sewerage Com- sion in 1912, remaining till 1915, n he went into private construction a supervisory capacity and also be- e a consulting engineer. In 1934 he was appointed resident engineer inspector in the Public Works Administration. From 1940 until his death he was with the Public Housing Authority.

George Foster Hanning, 75, former head of the Ontario Department of Highways, Niagara District, died at Clarkson, Ont., Oct. 22. Mr. Hanning, a graduate of Toronto University in civil engineering, was formerly connected with the Canadian Northern Railway, prior to its incorporation in the Canadian National system.

George R. Merrill, 54, Middlesex County, N. J., engineer since 1932 and an authority on park planning, died Oct. 29. Mr. Merrill had recently been active on postwar road planning of county parks and highways.

News of the Week
(*Continued on page* 108)

CONTRACTS AND CAPITAL

CIVIL ENGINEERING construction volume in continental United States totals $127,195,000 for October, 1944. This volume, not including the construction by military engineers abroad, American contracts outside the country, and shipbuilding, tops the preceding month's total by 8 percent, but declines 34 percent from the corresponding 1943 month's volume.

Private construction for the month is 16 percent higher than in September, but is 52 percent lower than in October, 1943. Public work is 6 percent above last month as a result of the 8 percent increase in federal volume and the 1 percent gain in state and municipal, but is 28 percent under last year due to the 38 percent drop in federal. State and municipal construction exceeds its October, 1943 volume by 58 percent.

The current month's construction brings 1944 volume to $1,506,756,000 for the ten months, a total 44 percent below the $2,681,752,000 reported in the corresponding period last year. Private construction for the year to date, $313,849,000, is 17 percent lower than in 1943, and public construction, $1,192,907,000, is down 48 percent. Federal work totals $978,480,000, 54 percent under last year, and state and municipal volume totals $214,427,000, 20 percent above the 1943 period.

CONTRACTS

Continental U. S. Only (Thousands of Dollars)

	Week Ending Nov. 4 1943	Oct. 26 1944	Nov. 2 1944
Federal	$18,592	$8,382	$22,906
State & Municipal	1,226	4,350	3,873
Total public	$19,818	$12,732	$26,779
Total private	15,388	9,442	5,614
TOTAL	$35,206	$22,174	$32,393
Cumulative 1944 (44 weeks)			$1,539,149
1943 (44 weeks)			$2,716,958

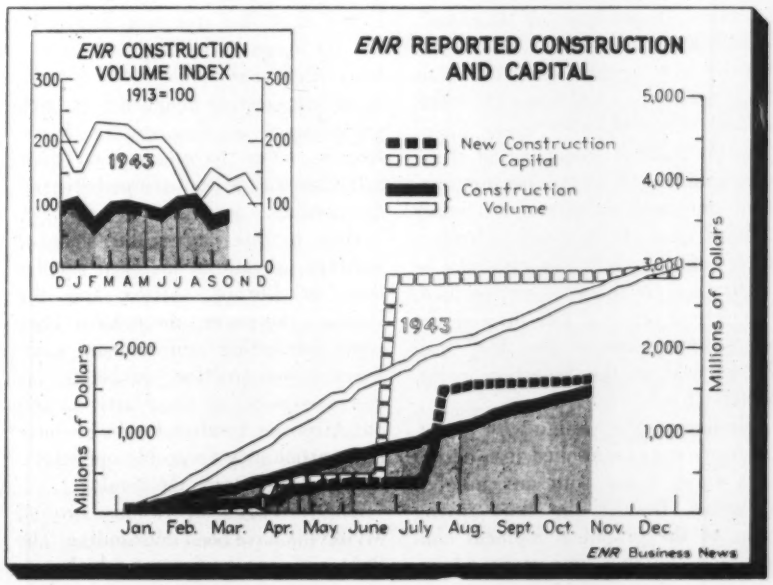
Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1943 44 Weeks	1944 44 Weeks
NON-FEDERAL	$289,789	$397,996
Corp. Securities	18,228	96,970
State & Mun.	105,883	160,086
RFC Loans	14,545	57,940
FPHA Loans	3,133	
REA Loans	20,000	20,000
Fed.-Aid Hwy	128,000	63,000
FEDERAL	$2,753,838	$1,263,800
TOTAL CAPITAL	$3,043,627	$1,661,796

ENR INDEX NUMBERS

Index base=100		1913	1926
Construction Cost.	Nov. '44	301.09	144.73
Building Cost	Nov. '44	236.10	127.63
Volume	Oct. '44	91	40


ENR CONSTRUCTION VOLUME INDEX
1913=100
1943
D J F M A M J J A S O N D
ENR REPORTED CONSTRUCTION AND CAPITAL
New Construction Capital
Construction Volume
1943
Millions of Dollars
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec
ENR Business News

Comment and Discussion

Readers' opinions on matters that concern engineers and contractors

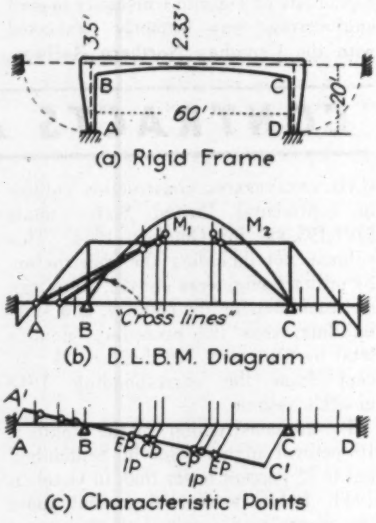
Rigid Frame Design

Dear Sir: It is almost impossible to overemphasize the time saving value of the analysis of rigid frame based on a typical frame presented by J. C. Spotts in his paper, "Simplified Concrete Rigid Frame Design", (*ENR*, July 27, 1944, vol. p. 100. Similar advantage with the typical frame may be resulted with the graphical distribution of moments, as shown on the accompanying sketch.

Sketch (a) shows the rigid frame considered by the author in his illustrative example. For convenience of the graphic construction the columns were flattened to line *BC*. In the assumed typical rigid frame the characteristic points termed "central points, inflection points, and elastic points", which were abbreviated to *CP*, *IP*, and *EP*, respectively, are shown on line *A'C'* Sketch (c). Line *A'C'* is drawn at an arbitrary slope to *AC*. By the parallel lines to *A A'* the characteristic points are carried to the frame axis *AD* Sketch (b).

The central moments M_1 and M_2 Sketch (b), are determined in the similar manner as the fixed end moments. Likewise, the central moments may be computed with constants shown in the booklet entitled, "Analysis of Continuous Frames by Graphical Distribution of Moments", published by the writer. Mention of this booklet appeared in the New Book Section, (*ENR*, Jan. 13, 1944, p. 58). The graphic "cross lines" gives the point for construction of the closing line and of the bending-moment diagram, Sketch (b). If only a single span of the frame is loaded, the bending moment diagram may be constructed by the short-cut method. The closing line is drawn through the intersection point of line M_2C with the vertical at the inflection point, Sketch (b).

Similar graphic design with a typical frame may be applied in a design of a rigid frame with any number of spans. Besides the time saving value of the graphical moment construction, another important advantage is that the moment diagram may readily be checked. Furthermore, the resulting bending moment diagram gives a criterion for selecting the rigid frame sections.



A. A. EREMIN,
Associate Bridge Engineer, California Department of Highways, Sacramento, California.

Aviation Engineers

Sir: I have read with much interest the article on Aviation Engineers in the July 27 issue of *ENR*, vol. p. 84. I feel that the Aviation Engineers are fortunate in having had such a fine article descriptive of their work in an engineering magazine of such preeminence as *Engineering News-Record*. You have discussed their activities with a very sympathetic understanding.

Here in this Theater the scale of military operations has been smaller than in Europe, Africa and the Pacific. However, there have been some interesting and unusual engineering construction problems, as you recognize in your article, and our Airborne Aviation Engineers have had particularly favorable opportunities to demonstrate their value.

The airborne operations around Myitkyina have been outstanding. The light airborne equipment which was used initially has been gradually reinforced by flying in the personnel and the bulk of the heavy equipment of two standard battalions. Several hundred plane loads of men and heavy equipment have thus moved to Myitkyina without benefit of a road and without the loss of a man or piece of equipment.

Maj. Gen. Stratemeyer of the Eastern Air Command, in a world-wide broadcast a month ago, said, "The airborne engineers are building our fields against terrific handicaps. So well did they do their job with the seized airstrip at Myitkyina, that during a twelve-hour stretch recently that field averaged better than one take-off or landing every two minutes—a traffic rate surpassing that of La Guardia Field. And this with Japanese troops only two thousand yards away."

S. C. GODFREY
Brigadier General, U. S. A.
Air Engineer
China, Burma, India
Air Service Command

Stresses in Green Timber

Sir: Engineers in the lumber industry while appreciating the part timber has played in the war emergency, have regretted the extent to which unseasoned lumber has had to be used in truss construction for lack of time to season it. It is gratifying to note the slight extent, as reported by Glenn B. Woodruff in his letter and article in *ENR*, Oct. 5, 1944, to which this has been the cause of unsatisfactory results.

In Mr. Woodruff's letter, vol. p. 400, he states: "The article, 'Are Timber Checks and Splits Serious', in *ENR*, July 27, 1944, vol. p. 110, appears to be based on the concept that green material is the sole cause of trouble now occurring in many timber structures." The article, however, was not based on this concept, but on the fact that when unseasoned material is used, trouble may result if there is lack of servicing during seasoning in place. In the first paragraph the article recognizes that design may be faulty, or that improper material may be used, but the purpose of the article was to discuss possible effects of seasoning in place if unseasoned lumber were used.

In Mr. Woodruff's article, vol. p. 414, "Green Timber for Structural

Use," he discussed splitting and secondary stresses, and plastic and elastic deformation.

He states that the usual explanation of splitting is restraint during the shrinkage period, but that he believes that high secondary stresses are a more valid explanation. There are various secondary stresses. Some are inherent to connector action but are negligible if joints are kept tight, even if unseasoned lumber is used. Others are due to movement or to eccentricity, as Mr. Woodruff states, and are more or less subject to control in design.

To the extent that there are secondary stresses, however, it would seem desirable not to add shrinkage stresses, and so to use seasoned lumber under normal conditions of time and availability. Before the war the demand from fabricators for seasoned lumber was becoming more and more insistent, and more and more was available. After the war, an even greater percentage will be seasoned. Splitting of seasoned lumber was seldom evident in structures built before the war. Also, one of the principal advantages of using seasoned lumber, aside from freedom from splitting, is almost complete elimination of the need of servicing during seasoning in place.

The effect of secondary stresses, and distinction in effect between plastic and elastic deformation, and relations among these factors, have not been authoritatively evaluated. Working stresses in use have been determined by the U. S. Forest Service, Forest Products Laboratory, by test rather than by complex and possibly erroneous assumption and stress analysis.

The laboratory finds that stress distribution in timber-connectored joints is complicated, that stress and strain distribution beyond elastic limit are often uncertain and irregular. They state that while any stress can be analyzed mathematically, assumptions must be made as a basis for any mathematical analysis, and with complicated stresses it is often difficult to develop assumptions of sufficient accuracy for exact mathematical calculation until the assumptions have been checked and corrected by test. The tests made include all the factors and stresses involved in a connectored joint, and resulting recommendations provide for reduction in load for connectors used in groups, and allowance for the various stresses, including effect of length of time of loading, in a joint in which adjacent faces of members are kept in control. If these faces become separated, the joint no longer conforms to design assumptions, and cannot be expected to perform as designed.

Considerable progress has been made in theoretical stress analysis and in correlating results with data on mechanical properties of wood and metal. Progress at the laboratory is reported in Technical Bulletin No. 865, U. S. Department of Agriculture, "Timber-Connectored Joints, Their Strength and Design," and later conclusions are incorporated in the provisions of WPB Directive 29, and in the current Design Manual for Teco Connectored Construction.

Discussion and suggestions such as those in Mr. Woodruff's letter and article will speed understanding of the problems and of their solutions. In the meantime, competent design and proper material remain the primary essentials for good fabricated structures, as Mr. Woodruff states, and the laboratory has provided safe design recommendations, based on the results of tests. With these and seasoned lumber, little maintenance servicing is required. With these and unseasoned lumber, stresses in a normal joint will be within safe working loads if nuts are tightened on bolts to keep faces of adjacent members in contact during the seasoning period.

C. J. HOGUE,
In Charge of Technical Service, West Coast Lumbermen's Assn., Seattle, Wash.

Engineers Should Be Heard

Sir: The article captioned "Engineering Society Heads Oppose Destruction of German Industries" with particular reference to the subheading "Engineers Should Be Heard" appearing in your issue of Oct. 5, Vol. p. 395, plus a remark made in a recent speech by one of the five officials mentioned in the article, to wit: "engineers must do something for themselves or have it done for them" gives me a chance to exercise my pet peeve once again.

For the last 37 years I have heard a constant series of complaints on the shortcomings of engineers, viz: they are poor speech-makers; poor report writers; poor salesmen as regards their own qualifications: they are not interested in politics; their efforts are not fully appreciated; etc.

This situation is the engineers' own fault—partly an innocent one—in that they are in general so wrapped up in their own activities that they don't seem to have any particular interest in matters not closely associated therewith.

The result is that engineers who are really the backbone of our industrial, political and civic existence do not have a civic or professional standing comparable with other professions. If they want any particular public recognition they have to beg for it—witness: "Engineers *Should Be* Heard."

Notwithstanding the fact that I am at present two years behind in minding my own business, I am going to make a suggestion which I firmly expect will be gracefully ignored!

That the five engineering societies mentioned in the aforesaid article in combination with *all* the other engineering societies deliberately and with malice aforethought, retain the services of some nationally known advertising firm with instructions to use every legitimate means to raise the standing of the engineering profession.

The past record shows that engineers have not done certain things for themselves and there is no indication that they ever will—hence they will have to seek assistance.

It can be done. It requires a determination to do it backed up by a liberal appropriation of money.

In conclusion, if a plan of this character had been in effect in the years past, engineers wouldn't find themselves in the present collective bargaining mess.

HAROLD M. GOULD
Independence, Mo.

Error in Sewer Calculations

Sir: Two errors occurred in the article, "Improved Graphs for Sewer Calculations," by V. Bogvad-Christensen, published in *Engineering News-Record* Oct. 5, 1944, vol. p. 421. On the last page of the article, left column, third line from bottom, 0.21 was used instead of the value 0.021 derived immediately above. A similar error may be noted in the example worked out in the left design chart.

H. R. DECKER.
1023 W. Prairie St., Decatur 3, Ill.

EDITORIALS

VOLUME 133 NUMBER 18

November 2, 1944

Non-Deferable Street Maintenance

TWO SALIENT FACTORS indicate clearly the urgent need for accelerated street maintenance throughout the remainder of the present construction season. One is the necessity for protecting badly cracked pavements from the deleterious action of fall and spring freezing and thawing. The other is the likelihood of increased traffic on frost-bound streets next spring, either from continued wartime traffic, increased operation of civilian automobiles or a combination of both. Although the paint slogan, "save the surface and you save all" does not apply in toto to street pavement, nevertheless it is true that the old and rapidly deteriorating pavement which receives a seal coat or resurfacing mat this fall will be able to take increased punishment from next year's traffic.

Specialized Economy

BECAUSE lumber is a critical material out in the Pacific, many and diverse are the expedients used to get along without it or to conserve that which is available. It was in following both of these courses that Army Engineers developed the Hawaiian-type barrack, which requires only a small fraction of the lumber needed for the standard and well-known 63-man type, which itself was carefully designed to eliminate all non-essentials. The difference is that in the Hawaiian type the effort went farther than merely to avoid waste. Design objectives were the lightest construction consistent with safety and the use of all feasible substitutes for lumber. In ordinary structures of this general type, major lumber requirements are (a) sheathing for walls and roof and (b) beams and joists for the floor system. In the Hawaiian type these two items got special attention. For sheathing it was possible to substitute a fiber board made of a waste product from sugar mills. Joists in the upper floor were reduced in size by a clever cantilever feature, and concrete was specified for the ground floor where conditions permit. On sloping ground or where other conditions make concrete impracticable, alternate designs had to fall back on wood beams and joists, emphasizing the fact that for such structural items no substitute will serve quite as well as wood. In developing the Hawaiian type barrack the Army Engineers have chalked up an achievement in what might well be termed specialized economy.

Money for Planning

BURIED IN THE RECONVERSION BILL passed by Congress shortly before its election recess was a provision authorizing the Federal Works Administrator to make loans to states and their political subdivisions for advance planning of postwar public works other than housing (*ENR* Sept. 28, vol. p. 380). This is a desirable provision because due to lack of planning funds, a large amount of public work below the federal level is not being advanced to the stage of having actual plans and specifications prepared. In some places this results from shortsightedness on the part of the city council or like administrative agency, but in many others it is caused by the fact that there are legal limitations upon the appropriation of funds for engineering studies until the project has been approved by the voters. Congress has endeavored to get around this situation by authorizing the FWA administrator to make loans for planning and design work that need not be repaid until the project has been approved and financed. If the project fails to get approval, no repayment is required. One further fact remains to be mentioned: no loans can be made until Congress appropriates the money. This should be a first order of business when Congress reconvenes. Postwar construction cannot start without plans, and planning cannot start without funds.

Inflation by Law

IN A COUNTRY proud of a heritage of opposition against monopoly and loud in its praise of the fruits of free competition, recent court decisions that the Sherman anti-trust act is not enforceable against labor unions mirror a dangerous situation. The latest such decision permits the AFL electrical workers union in New York City to continue its refusal to install equipment manufactured by companies with which it has no "agreement." Patently the agreements that it has with favored companies are in restraint of trade, and tend to raise the cost of electrical installation in New York City. An earlier, but no less famous decision was that in which the hod carriers union was upheld in its efforts to limit the use of labor-saving truck mixers, once again tending to increase construction costs.

Were the nation's newspapers to headline an

licable story, "Supreme Court Favors Mon-ly and Increased Construction Costs," they ld not be violating the facts, for one of the ve decisions was rendered by that highest court the other stemmed directly from precedents by it. Not only do such decisions legalize mon-ly, but they may be said to condone the strong-methods by which the monopolies sometimes been established and maintained. And what bad, they legalize inflation in construction costs permitting the labor unions and their industry s to set prices without competition and to pro-t labor-saving devices that they do not like. such an atmosphere it will be difficult for y postwar construction plans to flower, even gh in some of them, low-cost housing, for ex-le, labor unions would seem to have a big e. Both Congress and the Supreme Court have esponsibility to the nation, including union r, to remove this growing obstacle to progress.

Field of Promise

DECISION of the Engineers Council for Profes-al Development to extend its accrediting of icula to technical institutes (*ENR* Oct. 26, vol. 25) has much to commend it. E.C.P.D. has the rience to put such accrediting into effect kly as a result of its work of a similar nature the engineering schools, and both the engi-ing schools and the technical institutes should by the closer integration of their training pro-ns that must come from accrediting by a single cy. In fact, better technical institutes should much of the present unproductive load off the neering schools, thus permitting them to func-more efficiently.

the past, too many boys have gone to engineer-schools from high school because they thought would like to be engineers, only to find that lacked the necessary mathematical or scien-bent or background. Some dropped out and up subprofessional work; others struggled gh only to discover later that training for the s open to them should have been obtained in t half the time in a good technical institute. us, with better guidance in high school, which P.D. also is working to provide, fewer misfits ld get into engineering schools, and more boys e aptitudes are for vocational work will go to the technical institutes. On the other hand, those in the institutes who develop clear indications of engineering ability will be better fitted to move on into engineering schools. In fact, closer cooperation between the engineering schools and institutes should permit many improvements in the training of both engineers and subprofessional men.

Beyond the Law

A MOVEMENT that has found considerable support among engineers is one to require applicants for registration as professional engineers to pledge adherence to a code of ethics. Before such a proposal goes much further, appraisal of its implications and possible disadvantages is desirable.

Few will question the desirability of *voluntary* adherence to a code of ethics on the part of any individual, regardless of his occupation. If everyone willingly observed the Golden Rule, this would be a much better world to live in. Codes of ethics and codes of practice are desirable in professional organizations as a source of inspiration and as a means for maintaining the standards of any profession at a high level. But when an attempt is made to carry this voluntary adherence to a code of ethics over into the field of licensing engineers to practice, the situation changes completely.

The sole purpose of a license is an attempt to determine an individual's *technical* competence as a means for maintaining public safety. Hence, in the first place, the state has no right to ask an applicant to pledge adherence to a code of ethics.

In the second place—and this seems to be more important—such a pledge ceases to be voluntary, and so loses all its moral force once it becomes a document that is laid before an applicant for a license. There may be no hint of compulsion in the manner in which the pledge is brought to the applicant's attention, yet the very fact that the license board brings such a pledge to his attention as a document that other applicants have signed singles him out if he refuses to follow suit. And the doubtful characters, the ones who are most anxious to "get by", will be the first to sign under such circumstances. Thus the code is made a mockery.

Acceptance of a code of ethics should be a wholly voluntary act. The only way to make it so is to divorce such acceptance completely from any semblance of being a requirement of law.

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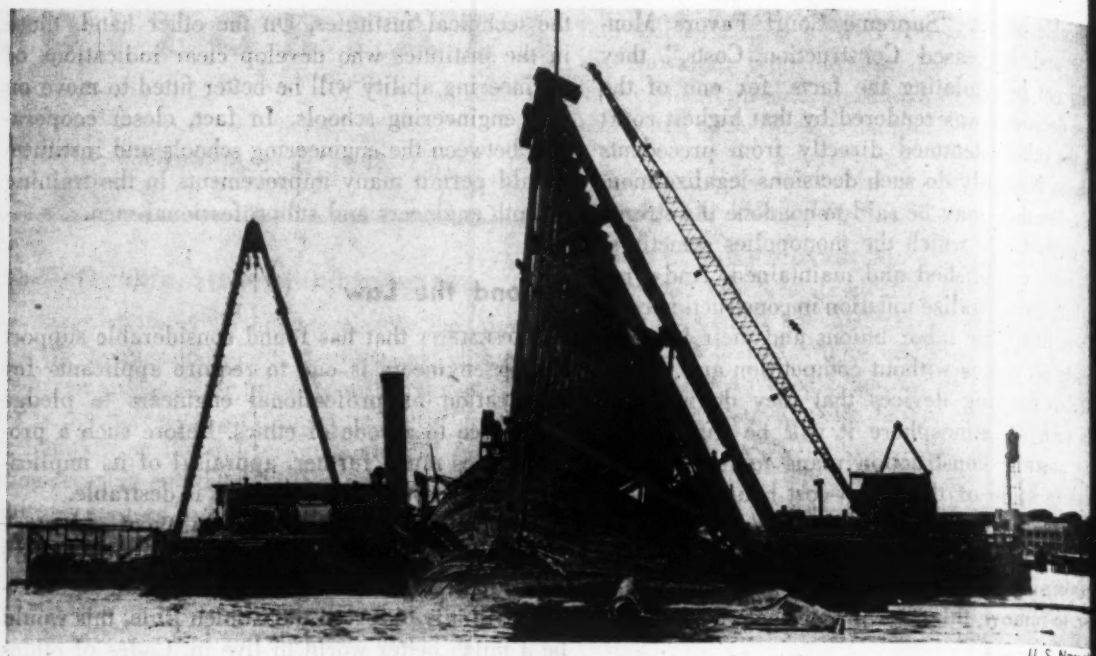


U. S. Navy p

Fig. 1. Timber A-frames set on bottom of the hull of U.S.S. Oklahoma provide leverage for righting the 30,000-ton

Righting the Battleship Oklahoma

***Contents in Brief**—The 30,000-ton U.S.S. Oklahoma, left almost upside down by the Jap attack on Pearl Harbor, was righted by pulling with multiple lines, rigged over high A-frames to increase the lever arm. A pull of 9,000 tons was exerted by 105 hp. of installed power controlled and equalized by variable voltage motors. Investigation of method with a 1/96-scale model gave results within 5 percent of the pull recorded in actual righting.*

RIGHTING of the *U.S.S. Oklahoma*, 30-000-ton battleship of the Pacific fleet, blasted and sunk by the Japs on Dec. 7, 1941, was accomplished by a civilian construction organization working with the U. S. Navy. Using the principles of long lever arms, compound pulleys and reduction gearing to get almost infinite power from a small input, Pacific Bridge Co. righted the huge 14-in. gun ship by rotating it, and then patched it and pumped it out so that it could be floated to a drydock.

The contractor was just completing a job for facilities at Pearl Harbor for the Bureau of Yards and Docks of the Navy when the Jap sneak attack occurred. Accordingly the entire organization was secured by the Navy to assist in the salvage work. While the company's field organization was occupied in refloating other vessels in the harbor, its engineers were studying the special problem presented by the *Oklahoma*.

The vessel was sunk parallel to and about 500 ft. from the shoreline of Ford Island, with a list to port of about 150 deg., i.e., almost upside down. Only a fraction of the ship's hull was above the waterline.

Schemes for salvage

A preliminary analysis indicated that righting might best be accomplished by methods comparable to those used in salvaging the *U.S.S. Maine*, which was sunk in Havana harbor during the Spanish War. In that case, a cellular type cofferdam was constructed around the vessel, unwatered, repairs to the hull effected, the cofferdam reflooded and the vessel floated. After a careful investigation of soil conditions which prevailed at the site of the *Oklahoma*, it was dent that any cofferdam scheme wo be a highly impractical, if not an possible, means of salvage.

Several other possible methods salvage were also investigated, am them: Sealing holes and pumping ter out of the hull; use of pontoo rotating the vessel to normal posi by use of counterweights; use floating drydock as a partial me of buoyancy; and the use of win and rigging for righting. Altho the work probably could have b accomplished by any of the meth listed, the latter, using win and rigging, was adopted as pro ing to be the most satisfactory. volving the installation of fra upon the boat bottom, and the str ing of rigging from frames shore anchorage, it also required struction of fixed shore anchora on which were mounted po winches designed to take the pulls required to rotate the ves After the job was completed the vage officials were still of the opi that the method used was unques ably the best one for the purpose.

The scheme adopted for ac

hing the righting was practically precedented, and all hands had to t from scratch, requiring the clos- coordination between design and struction organizations. Pacific dge Co.'s engineering organization rked out the detailed procedure righting with the assistance of y salvage personnel. To aid in the tion, and as a check against the ineering calculations, a model of ship was built to 1/96-of the true . By a system of scales and gages, field problem and its factors were ulated. The results obtained from model checked closely with com- ations of the engineering analysis. s also noteworthy that the actual l required to right the vessel was hin five percent of the original cal- ations.

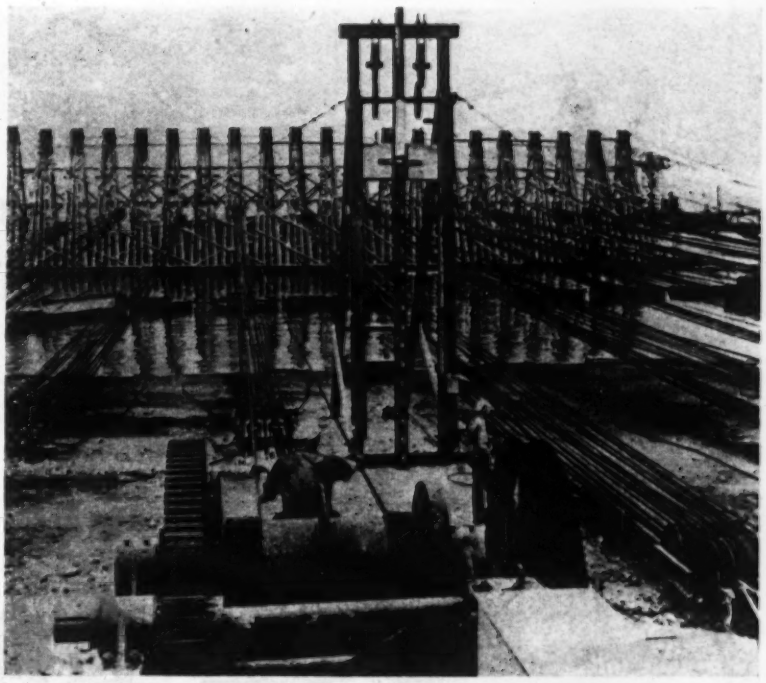


Fig. 2. Two sets of 17-part lines and large ratio gear reductions on the hoists step the power of twenty-one 5-hp. motors up to 9,000 tons, sufficient to pull the 30,000-ton battleship upright.

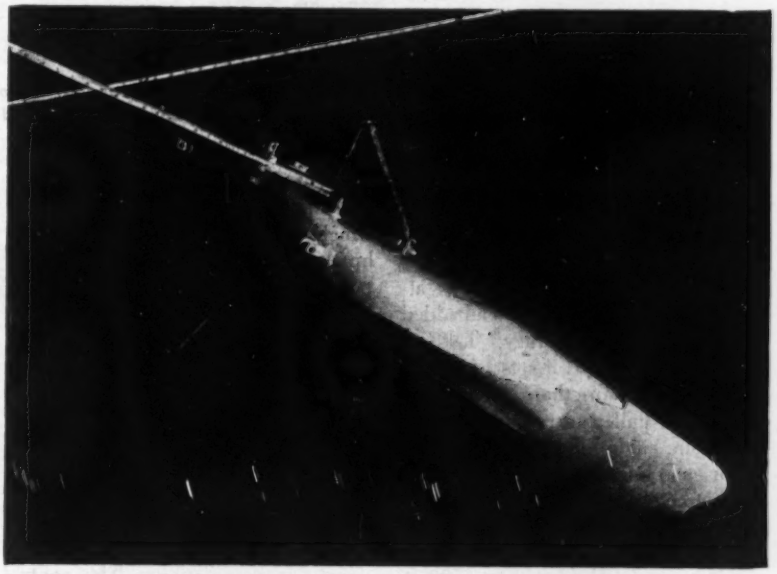


Fig. 3. A model of the battleship to a 1/96-scale was pulled from the mud. Pulls measured were within 5 percent of those obtained in the actual righting.

Pull of 9,000 tons required

After extensive investigation and earch, it was concluded that a force 9,000 tons applied to a lever arm ft. above the hull would be re- ired to accomplish the righting of vessel. If the pull at some time ring the righting process was found e tending to exceed the maximum ign figure, the required pull could held to 9,000 tons by dredging un- the ship, perhaps assisted to some ent by producing a "bubble" of mpressed air in the hull and thus nteracting some of the weight and holding power of the mud. Some ception of the magnitude of a 0-ton pull may be had by compar- it to the tension due to dead load the suspension cables of the San ncisco-Oakland Bay Bridge, which 3,500 tons.

he entire cable system for righting vessel was divided into 21 similar ts, each designed to provide a pull about 429 tons at the ship. This l was resisted by a bridge type le anchorage, requiring 4,000 cu. of concrete. The anchorage, be- se of the alignment of the shore with reference to the position of ship, was poured in two blocks of 00 cu. yd. each.

he required lever arm of 62 ft. ve the hull was obtained by pulling r a timber A-frame, so arranged t the principal compression load each of the 21 pulling units was en by four 18x18-in. timber struts d in position by lighter timbers t were set nearly vertical in the ginal position. Tension stress at the A-frame was taken by cable backstays, in most cases eight strands of 1⅞-in. improved plow steel 6x19-wire rope. These were attached to the ship by hitches welded to each frame. Adjustment for equalizing the tension in the eight backstay cables was obtained through bolts in bridge sockets at the lower end of the cable.

At the top of the A-frame the load was transferred through a head casting to two 3-in. dia. cables 300 ft. long extending shoreward. These were 6x37-improved plow steel with an independent wire rope center fitted with bridge sockets, which permitted equal adjustment. The shore ends of the 3-in. cables were attached to a double-sheave block designed for two lead lines of 17 parts each. These

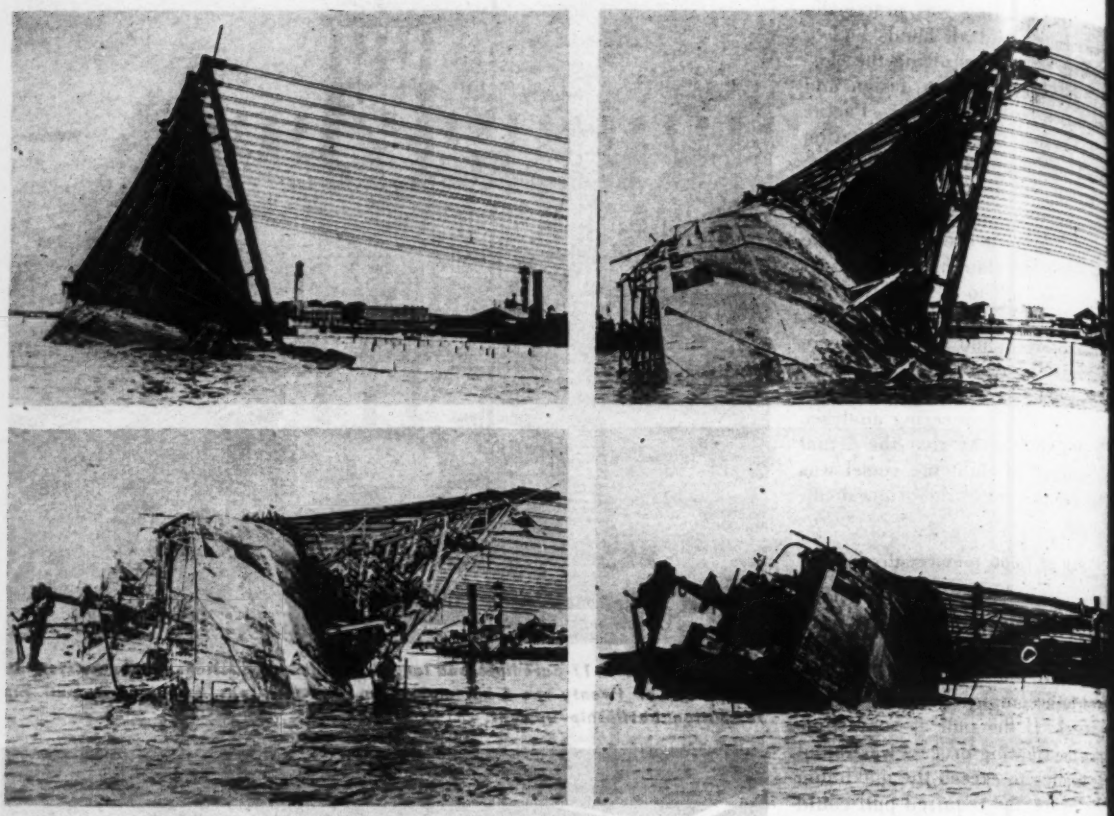


Fig. 4. Righting views from left to right: Note that the A-frames dropped out of the system at about 70 deg. list and were removed. Cables were transferred, one at a time, to connections around the gun turrets.

blocks were assembled with 24 and 28-in. dia. sheaves fitted with special bearings so the entire system had an efficiency of 70 percent.

The second set of blocks was attached to the anchor bars embedded in the concrete anchorage. Take-up space between the two sets of blocks was somewhat more than 200 ft. at the start of the pull, and required 10,000 ft. of 1-in. cable for each unit (5,000 ft. for each line). The lead lines were taken to specially designed winches with split drums, Fig. 2, each with a capacity of 1,000 ft. of 1-in. cable, or 2,000 ft. total. The 1,000 ft. (500 ft. for each line) of take-in in the lead lines permitted 15 deg. of rotation of the ship. After that movement it was necessary to clamp-off the lead lines, cut the cable, unreel 500 ft. per line of cable and secure the live end of the cable to the drum for successive pulls.

The winches were of Pacific Bridge Co.'s special design, each powered by a 5-hp. direct-current motor operating at 1,000 rpm. The power was transmitted to the winch through a reduction gear, with a resulting line speed of about of about 1-ft. per min., at a line pull of 18 tons, 36 tons per winch. Only 105 hp. (21 units at 5 hp. each), which is comparable to the power of a modern automobile, was used in the winch design to exert a pull of 18,000,000 lb. Serious delay was avoided in the manufacture of the winches by having the parts built by twenty independent shops and assembled by the company's forces.

A precise, individual control of the winch speed was obtained by the installation of variable voltage motors, permitting absolute control of the winch drum rotations. The control board of the electrical system was installed at a central location where the pull on each of the 21 units was adjusted and controlled electrically.

When the ship was righted to a list of 70 deg., the A-frame struts lost their effectiveness and dropped out of the system. In this position the backstay cables attached to the frames of the ship, just above the turn of the bilge, were removed one at a time from the hitches and transferred to gun turrets on the deck. The connections between the pulling cables and the gun turrets were made by cable grommets. By successive pulls with the cables attached to these new positions, the ship was righted to within 5 deg. of level.

At this stage the after-deck of the vessel was 10 ft. below water level and the forward deck was just awash. Further progress depended on getting the water out of her. Accordingly a wooden cofferdam was constructed around the aft end, held to the deck by weight boxes loaded with sand bags, and once this cofferdam was complete, twenty 10,000-gpm. deep well pumps were installed for the dewatering. As the pumping proceeded divers isolated compartments of the ship by closing watertight doors and hatches. However, a survey made by divers disclosed severe and extensive damage to 170 ft. of the midship section, extending from the main deck to the bilge of the ship, where several sheets of armor plate had been torn loose leaving a gaping hole in the hull.

From the dead weight of the ship

calculated that the vessel would when the water was lowered 26 inside of the hull. Controlling in design of the major patch, efore, was that it should withstand force of a 26-ft. hydrostatic head. as concluded that the only safe edure would be to design a patch, reacting loads of which could be at a sound part of the hull.

he patch was designed with ver- trusses 16 ft. deep at 4-ft. centers. as made up in panels of two es each and they were placed in tion with a form at the bottom nding toward the vessel and ched to its shape. To carry the om reaction of the load, a tremie crete slab was poured between the h panels and the ship. The upper tion was taken by shoring, above er level, bearing against deck ctures. Ends of the patch were ed by pouring a tremie concrete et.

hen the main patch was com- ed, pumps were introduced be- en the ship's hull and the patch unwatering proceeded rapidly. eral isolated locations of minor age were treated with soft patches. continuous pumping and patching, as possible to raise the ship to a

Fig. 5. Main battery of 14 in. guns is used for anchorages for cables to continue righting the Oklahoma.

draft of 40 ft., at which time it was taken into a graving dock at Pearl Harbor where repairs were made to an extent that the vessel could be returned to the mainland.

The salvage work was directed by A. E. (Jack) Graham, vice president of Pacific Bridge Co. J. A. Ginella was project manager, F. W. Crocker was project engineer, and Les Freeman and Charles Bosordi were superintendents. The engineering and experimental work was done in San Francisco by the company's engineering staff.

For the Navy, Captain F. H. Whitaker was in charge of the salvage.

6. Almost on an even keel the Oklahoma is taken into a graving dock at Pearl Harbor for temporary repairs prior return to the mainland.

ENGINEERING ABROAD AS SEEN BY ENR EDITORS

New Barrack Design Saves Lumber

N. A. Bowers
Pacific Coast Editor, Engineering News-Record

***Contents in Brief**—Savings of up to 80 percent of lumber used in a standard Army barrack of the 63-man type were effected in a new design by Army Engineers for what will be known as the Hawaiian-type TO barrack. The objective of the design was to minimize use of critical material in the Central Pacific area.*

A NEW TYPE of two-story barrack designed to fit the requirements of climate in the Central Pacific area with an absolute minimum of critical materials, particularly lumber, was designed by the Army Engineers in the fall of 1943. Since that time experience with these extremely light structures in the Hawaiian Islands h been such as to encourage their ado tion for extensive use as operations the Central Pacific area increase. is expected that this type of structu will be shipped to advanced Arm bases with materials precut and read for assembly.

The new design was developed get the desired facility with a min mum requirement for the materia that are particularly hard to obtai in Hawaii and the Central Pacif area. In this theater of operati shipments from the states are affecte by the tremendous demand for a available ships in the movement war materials.

Outstanding characteristics of th new design are very low lumber r quirements as compared to that fo the standard 63-man barrack s widely used in Army cantonments an the use of panels of sugar-cane fibe (known to the trade as "Canec" made from a waste product of th sugar mills. For the standard 63-ma barrack as widely used in the con tinental United States, the require ment is 635 b.ft. per man as com pared to 114 b.ft. per man in the mo economical types of the new desig a saving of more than 80 percent. Th savings differ with type of floor sy tem and roof sheathing. For exampl on a side hill where it is not feasibl to use concrete floors more lumber needed than would be the case on level building site. There are also tw commonly used roof types, both ind cated in the drawing. The Canec roo sheathing, of course, is not str enough to support workmen and the are obliged to step on rafters or pu lins on a roof of this type. The rel tive quantities of lumber used in th

QUANTITIES OF MATERIALS USED IN TWO-STORY BARRACK BUILDINGS

	Total (B. Ft.)	B. Ft. Per Man	B. Ft. Per Sq. Ft.	Canec (Sq. Ft.)	No. of Men	Size (Ft.)
Canec sheathing and concrete floor	8,630	114	2.70	5,260	76	16 x 100
Canec sheathing and wood floor	12,530	165	3.91	5,260	76	16 x 100
Wood sheathing and concrete floor	14,580	192	4.56	——	76	16 x 100
Wood sheathing and wood floor	18,500	243	5.78	——	76	16 x 100
Standard Army mobilization barrack	40,000	635	8.50	——	63	29½ x 80

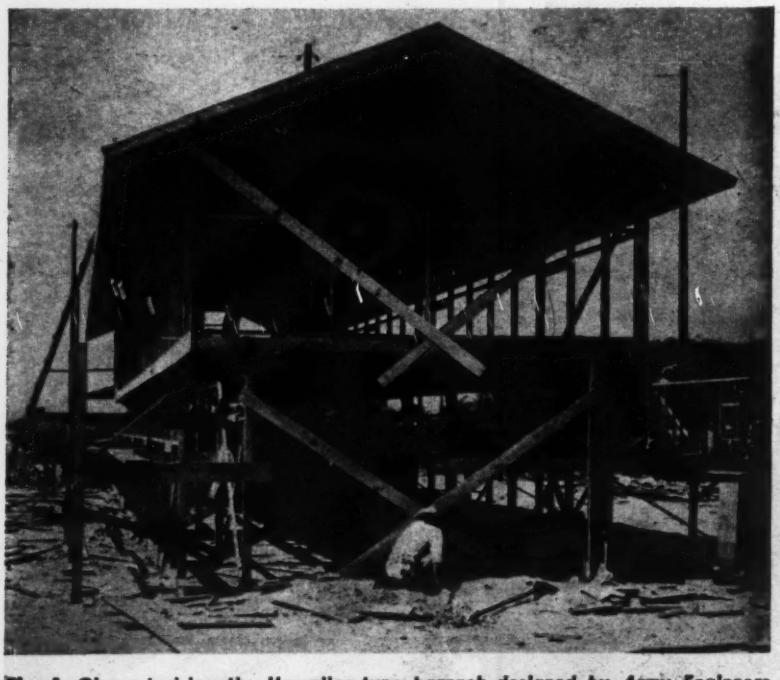


Fig. 1. Characterizing the Hawaiian-type barrack designed by Army Engineers for use in the Pacific areas the overhang shown here emphasizes the location of girders and 4x4 posts 2 ft. inside the outer walls. Large lumber savings result.

ferent types is given in the accom-
ving table.

The 16-ft. width of these barracks is
d to permit of placing the cots
h the heads against the outer wall,
ving a central aisle as a passage-
y. With this arrangement there is
disadvantage in having the sup-
rting posts set in 2 ft. from the
er wall, a layout which reduces the
n of the upper floor joists by 4 ft.
is shorter span makes it feasible to
2x6 ceiling joists instead of the
s that otherwise would be re-
ired.

The buildings are usually made 100
long, but the design can be fitted
o any length of barrack that suits
e camp layout. Where the length is
re than 100 ft. crossbracing is put
midway and usually paneled with
me non-inflammable material to
ve as a fire wall.

The crossbracing is part of the pro-
ion for wind load which was con-
dered very carefully in selecting the
mber sizes. In the Hawaiian Is-
nds winds are relatively mild and
wind loading of 5 lb. per sq.ft. (to
ist a wind of about 35 m.p.h.) was
nsidered sufficient. Long-term rec-
ds in Honolulu show the maximum
nd velocity to be 40 m.p.h. which
uld be within the factor of safety
the buildings designed for a 35-
.p.h. wind. Because these structures
e considered as temporary and max-
ium economy of lumber was a major
jective, the highest permissible
rking stresses were used for Doug-
fir, namely, 2,000 lb. per sq. in.
r the wind stresses.

With economical design of this sort
d with standard details in a group
buildings, notable speed of erec-
n was soon attained. In a group of
of these barracks which were put
in 37 days the time allotment per
ilding worked out about as follows:
Carpenter work on frame, walls and
ofing, required 250 hr.; concrete
or (4-in. slab, unreinforced), 108
.; electrical work, 18 hr.; painting
d incidentals, 5 hr.—a total of 381
an-hours.

The 4x4 posts which carry the up-
r floor load are supported on pre-
st concrete piers which have a steel
wel projecting vertically from the
p center and horizontally from each
the four sides. The former is fit-
d into a hole in the bottom of the
st and the latter serve as means of
nding into the concrete floor slab
which is poured around the piers.

These lightweight barrack buildings were designed and constructed under the direction of Brig. Gen. Hans Kramer, who was, at the time of this construction, chief engineer, Central Pacific area, Engineer Corps, U. S. Army.

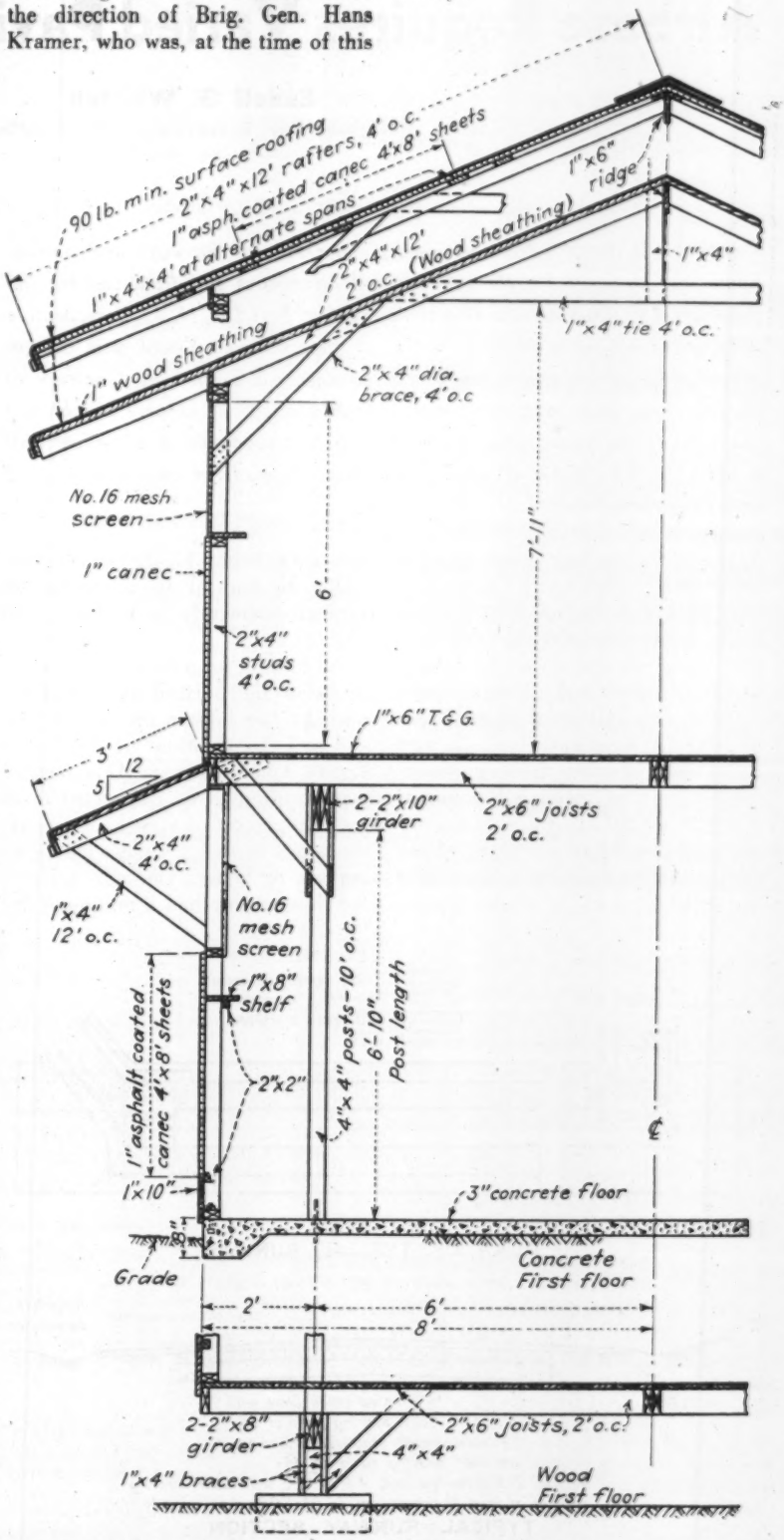


Fig. 2. Half section of the barracks showing dimensions and lumber sizes for the alternate floor and roof designs. Note that 2 x 6 joists are used for second floor due to shorter span between inset posts and girders.

Airbase Requires Varied Paving Operations

Eudell G. Whitten
Engineer, Elwyn E. Seelye and Arthur S. Tuttle,
Consulting Engineers, New York

***Contents in Brief**—Portland cement concrete for taxiways and aprons, bituminous concrete for the runways and bituminous stabilized soil for the shoulders were used in enlarging the airfield at Fort Dix, N. J. Comparative data on weight, strength and control of air entraining Vinsol resin cement prepared in pavers and in truck-mounted mixers is presented. Contrary to reports from some jobs, tests here indicated equal or greater weight and strength for the transit-mixed concrete over that produced in a conventional paver. The base under all of the surfacing was made of carefully selected soil, fully compacted.*

A VARIETY of paving problems were involved in enlarging the airbase at Fort Dix, N. J. to provide three runways 7,000 to 8,000 ft. long and numerous, taxiways, hardstandings and turnarounds and a hangar apron 5,300 ft. long and 300 ft. wide. Types of surfacing were varied to suit load conditions, ranging from portland-cement concrete through bituminous concrete to stabilized soil. Unfavorable soil conditions on much of the site made it necessary to remove large quantities of muck, peat and topsoil, the muck being 17 ft. deep at one point. Mechanical stabilization was applied extensively to the base materials.

All backfill for a depth of at least 3 ft. below the finished grade was required to be soils in the A-1, A-2 or A-3 soil classifications of the Public Roads Administration. This backfill was required to be compacted to at least 90 percent of maximum density, the top 9 in. being compacted to 95 percent or better. The soils selected for this purpose had a minimum dry density of 110 lb., a plasticity index below four and a California bearing ratio of 30 to 50. As some of the more sandy soils did not compact readily, binder soil had to be added at times.

Fills were built in layers 4 to 8 in. thick and were compacted with sheepsfoot rollers, tractors, road rollers and rubber-tired equipment. From 6 to 8 passes of a sheepsfoot roller generally were sufficient to obtain the specified density on the thicker layers. Fills up to 27 ft. high were made in this way and were immediately paved with concrete. No settlement was apparent.

Moisture-density relations in the fill material were determined by the modified American Association of State Highway Officials method, using equipment made on the job by the post engineer's staff. Field density determinations were obtained with a calibrated dry-sand apparatus in which the volume of the weighed sample is obtained by filling the hole from which it was taken with sand from the calibrated container.

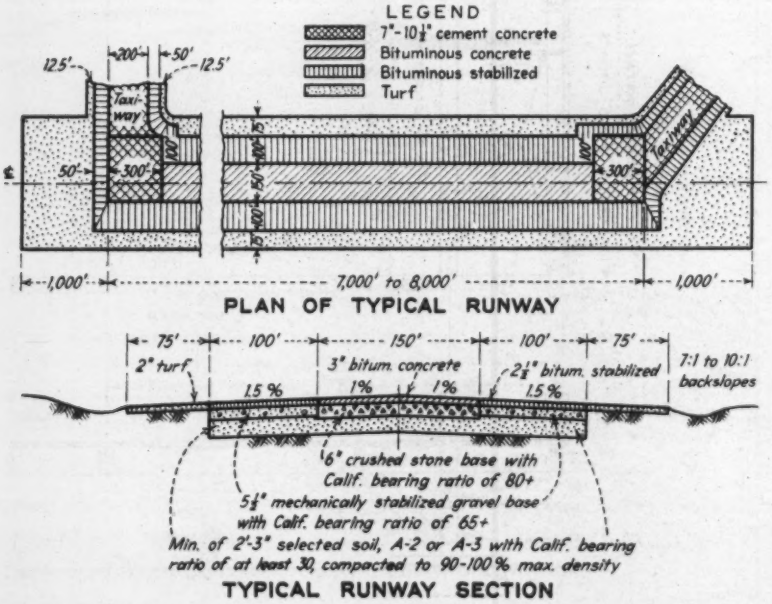


Fig. 1. Designed for a 37,000-lb. wheel load, a typical runway consisted of a 150-ft. width of bituminous concrete flanked at either side by 100-ft. bituminous stabilized shoulders. Pavement was constructed on a selected gravel subbase.

Several pavement types for runways

The several types of paving used on the runways are shown in Fig. 1. The central strip, 150 ft. wide, is paved with bituminous concrete on a crushed-stone base, and the sides are 100-ft. wide strips of bituminous stabilized soil on a mechanically stabilized base. Shoulders are of turf, 75 ft. wide.

The central strip is designed for a wheel load of 37,000 lb. (Flying Fortress and Liberator airplanes). It is made up of a 6-in. base, a 1½-in. binder course and a 1½-in. surface course.

Stone for the base ranged in size from ¾ to 3 in. It was spread in two layers from spreader boxes or by blade graders, each layer being choked with screenings ranging in size from that passing a No. 100 sieve to ¾ in. After rolling with an 8- or 10-ton smooth-wheel roller, the excess dust

s swept off and a prime coat of 0.3 l. per sq. yd. of MC-1, cutback as- alt, applied and allowed to cure for to 72 hr.

Hot plant-mix bituminous concrete s used for the two top layers, being uled a distance of 30 miles to the in insulated, covered trucks and livered at 250 deg. F. For the binder urse, graded stone was used in a nge from 3 percent passing a No. 0 sieve up to the 1½-in. size. It was ixed with 4.5 percent of asphalt of 0 to 120 penetration.

Smaller size stone was used in the p 1½ in., its range being from 6 per- nt passing the No. 200 sieve up to in. size. To it 6.5 percent of the me grade of asphalt was added at e mixing plant. This bituminous ixture was spread with a paver and lled with tandem and three-wheel llers of 8 to 10 ton weight.

Final operation in constructing the ituminous paving was application of seal coat consisting of 0.18 gal. per . yd. of RC-2 cutback asphalt cov- ed with 10 lb. per sq. yd. of sand, assing a No. 10 sieve. When this coat as compacted with a 6-ton tandem ller, a sandpaper finish hailed en- usiastically by the fliers using the unways was produced.

Large areas paved with concrete

Turnarounds, taxiways, parking prons, hangar aprons, fuel pads, ardstands, access roads and runway-xiway connections were paved with nreinforced concrete designed for a 6,250-lb. wheel load. Typical sections or this work are shown by Fig. 2. he slabs, which were placed on a ubgrade compacted to a modulus of ubgrade reaction *k* of at least 200, ere of 7-in. thickness, except at the dges, which were increased to 10½ in. The slab was built in lanes 12.5 ft. ide with expansion joints at 120-ft. enters and dummy groove contrac- ion joints on a 20-ft. spacing. At the xpansion joints ¾-in. dowels 16 in. ng were used on 12-in. centers. hese joints were filled with a ¾-in. hickness of bituminous impregnated iber board capped with a bituminous iller. The longitudinal joints were of he key type, ⅝-in. tie bars 30 in. long eing inserted at 30-in. centers in the utside joints only.

The concrete was designed for a trength of 700 psi. in flexure and ,500 psi. in compression. It was nade with air-entraining cement,

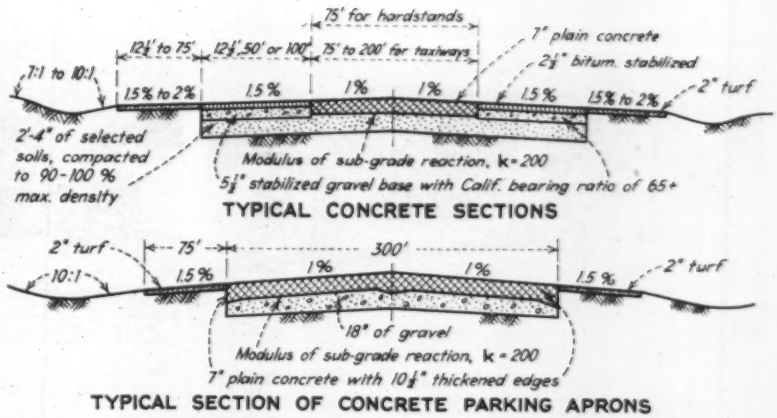


Fig. 2. Plain concrete pavement, flanked by bituminous stabilized shoulders, was used for the taxiways, hardstands, and parking aprons. This type of pavement, which was designed for a 46,250-lb. wheel load, was built on a selected subbase of high-bearing value.

0.025 to 0.045 percent Vinsol resin being interground with the cement in accordance with federal specifications E-SS-C-206A.

A real problem seemed imminent when one of the paving subcontractors decided to use truck-mounted mixers for manufacturing the concrete. Reports had been circulating among construction men that truck-mounted mixers frequently entrained such excessive amounts of air that a loss of strength as high as 50 percent had occurred when Vinsol resin cements were used. However, by cooperation on the part of everyone, trouble from the increase of the air pressure, due to overlong mixing and tightly closed drums, was prevented.

The materials were dry batched at the central plan and hauled dry to the job, mixing not being permitted during the trip from the plant to the site.

COMPARISON OF CONCRETES PREPARED WITH STANDARD PAVERS AND TRUCK-MOUNTED MIXERS

	Single-drum 27-E and Dual-drum 34-E Pavers	Truck-Mounted Mixers
Contractor	Union Bldg. & Const. Co.	Van Bro Const. Co.
Design mix	1:1.84:4.07	1:1.84:3.97
Slump	2 in.	2 1/2 in.
Coarse aggregate	Washed gravel	Washed gravel
Cement	SS-C-206a Vinsol resign 0.025 to 0.045 percent	SS-C-206A Vinsol resin 0.025 to 0.045 percent
Mixing time	1 1/2 min.	5 to 10 min.
Theoretical weight	152.9 lb.	152.7 lb.
Actual unit weight	147 to 149 lb.	148 to 149.9 lb.
Percent entrained air	3 average	3 average
Cement factor	5.8 to 6.0	5.8 to 6.0
W/C ratio	4.8 gal. per sack	4.8 gal. per sack
90-day comp. strength (Ave. of all cylinders)	4,200 psi.	4,270 psi.

Upon arrival of the trucks on the job the measured mixing water was added and the concrete mixed for 5 min. at a peripheral drum speed of 225 ft. per min. The mixer drums were vented with four ⅝-in. holes in the tail gate, and the discharge door was left partly open during addition of the water and mixing. All wash water was discharged before recharging the drum. The volume of mixed concrete was limited to one-half the gross volume of the mixing drum.

Because trouble was experienced with leaky valves when transporting the water to the job in the truck tanks, an experiment was tried by adding the water to the drum at the plant but not mixing the concrete until the site was reached. Unit weight tests for a few sample batches delivered in this way indicated no additional loss of weight, so this procedure was adopted.

The amount of air entrainment was checked continuously by unit weight tests made as follows: A representative sample of freshly mixed concrete was selected as deposited on the subgrade by the standard pavers or from the discharge stream of the truck mixers and compacted in a standard ½-cu. ft. calibrated density bucket by rodding each of 3 equal layers 25 strokes with a ⅝ x 24-in. bullet-pointed tamping rod, then striking off the top evenly with a straight-edge. The bucket and contents were then weighed on a scale accurate to within .05 lb. Both a spring scale hung from a tripod and a platform scale were used. Allowing for the weight of the bucket, the unit weight of the concrete in lbs. per cu. ft. was determined.

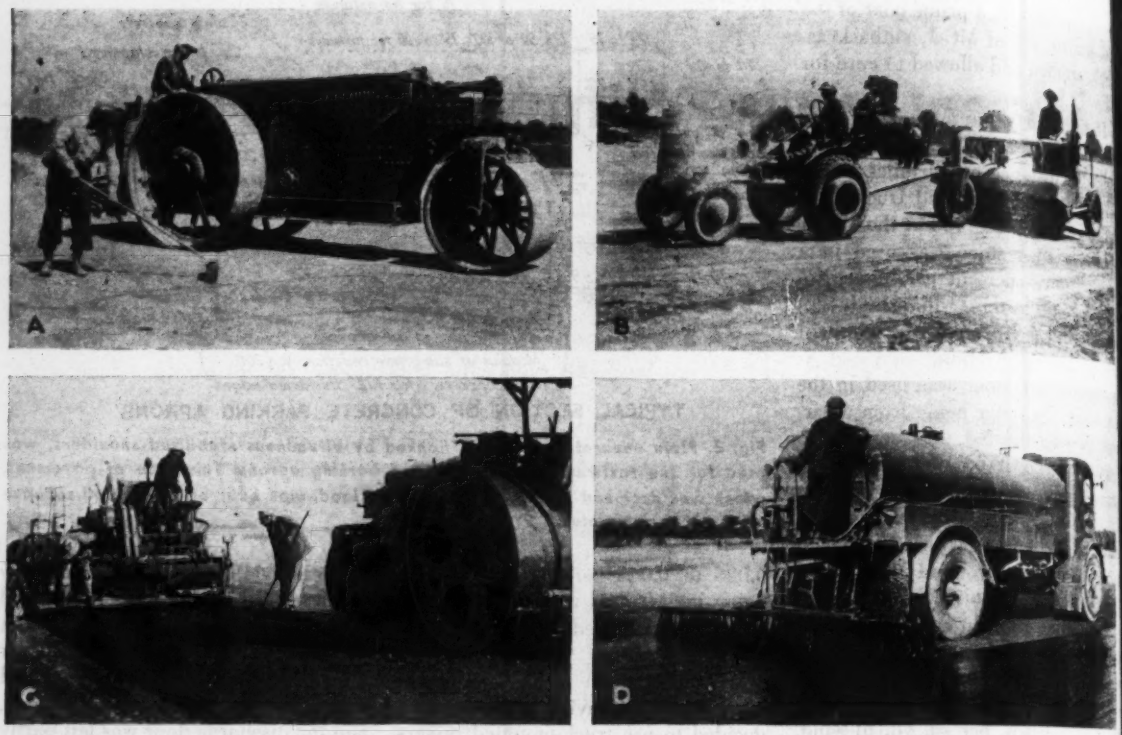


Fig. 3. Voids in upper surface of the base for the bituminous concrete were filled with dry dust worked into place with hand brooms, rollers, and sweepers (A & B). After the base had been primed, a paver (C) applied in two courses the 3-in. of bituminous pavement. Application of an RC-2 seal coat (D), and sand cover rolled in place completed the pavement.

That the optimum percentage of entrained air necessary to obtain the benefits of air entertainment without excessive loss of strength was secured is indicated by the actual unit weights obtained, which ranged from 147.0 lb. to 149.9 lb., corresponding to a percentage of entrained air of from 2 to 3.5 percent.

Compressive tests in the laboratory revealed that the air-entrained concrete produced in the truck mixers was equal in quality to that produced by standard 27-E and 34-E dual-drum pavers operating on the project at the same time and using the same cement and similar aggregates. The unit weight of the concrete was virtually the same when mixed 1½ min. in the paving mixers as when mixed 50 to 150 revolutions in the vented truck-mounted mixers. This comparison is illustrated by the accompanying table.

No special problems were encountered in spreading and finishing the air-entrained concrete. Following passage of the mechanical spreaders and finishers, the concrete was screeded and floated longitudinally. Experiments with several types of finishes revealed that the procedure of simply dragging forward a clean wet strip of burlap produced the best results. Curing was by spraying the surface and edges of the slab with a bituminous compound.

Another interesting feature of the project was the success of bituminous stabilization by mixed-in-place methods. The problem was to design and construct over 700,000 sq. yd. of stabilized shoulder adequate for limited service for a 37,000-lb. wheel load. The final design called for 8 in. of selected gravel soil with a California bearing ratio of 65 to 80, the top 2½ in. of the gravel to be stabilized with bituminous material and the bottom 5½ in. stabilized mechanically.

Fortunately, by extensive soil surveys, over 400,000 cu. yd. of gravel soil indicated by laboratory tests to be excellent stabilizing material was located within hauling distance. The average test results of this material were as follows:

Passing 1-in. sieve	95 percent
Passing ¼-in. sieve	60 to 75 percent
Passing No. 40 sieve	20 to 40 percent
Passing No. 200 sieve	2 to 8 percent
Liquid limit	Under 24
Plastic index	0 to 4
Soil group	A-2 by PRA classification
Unit weight	130 to 138 lb. per cu. ft.
Calif. bearing ratio	Over 65

The construction methods as finally developed were highly successful. As a first operation a 2-ft. 4-in. layer of selected subgrade soil having a California bearing ratio of 30 or over was compacted in 8-in. layers to 95 percent of maximum density by sheepsfoot and road rollers. The selected gravel soil was then spread, mixed, graded and rolled by smooth-wheel rollers to a compacted depth of 5½ in. and to 95 percent of maximum density at optimum moisture. No admixture was used.

Compaction difficulty overcome

Soils engineers with a field laboratory constantly made mechanical analysis of the gravel at the pits and made sure that the loading equipment was shifted to obtain the best mixture. They also controlled closely the grading and compaction work, using a calibrated, dry-sand apparatus for density and the Chapman flask for moisture content. As the plastic index of this gravel was approximately zero, some little difficulty was encountered in getting it to set up. However, continued rolling with the smooth rollers and sprinkling eventually gave the desired results.

After the 5½-in. thickness of me-

anically stabilized gravel was con-
idated, a prime coat of MC-1 cut-
k asphalt was applied at a rate of
25 to 0.40 gal. per sq. yd. No cover
s applied to this prime, it being al-
wed to soak in for 24 to 72 hr.

When the prime had cured, loose
avel delivered by truck was spread
th patrol graders to a depth of 3½
(to produce a finished depth of 2½
.) The depth of spreading was con-
olled by 3½-in. spreader blocks. Be-
re the asphalt binder was applied
e gravel was aerated by rotary till-
s or blade graders until the moisture
ntent was reduced to 2 percent.

MC-2 cutback asphalt was then ap-
ied at the rate of 0.6 gal. per sq.yd.
prevent fat and lean spots, partial
ixing was accomplished by having
e rotary tiller follow directly behind
e distributor truck. One or two
sses of the tiller was usually suffi-
nt for uniform distribution of the
phalt throughout the mixture. Next,
second application of 0.5 to 0.6 gal.
MC-2 was applied, followed imme-
iately by the tiller.

Final mixing was by blade graders
d tillers working in teams, the
aders cutting down to the primed
se and rolling the mix over into a
indrow followed by the tillers run-
ng through the windrow and leaving
e mix spread out flat. About 8 to 12
sses of both pieces of equipment us-
lly completed the mixing.

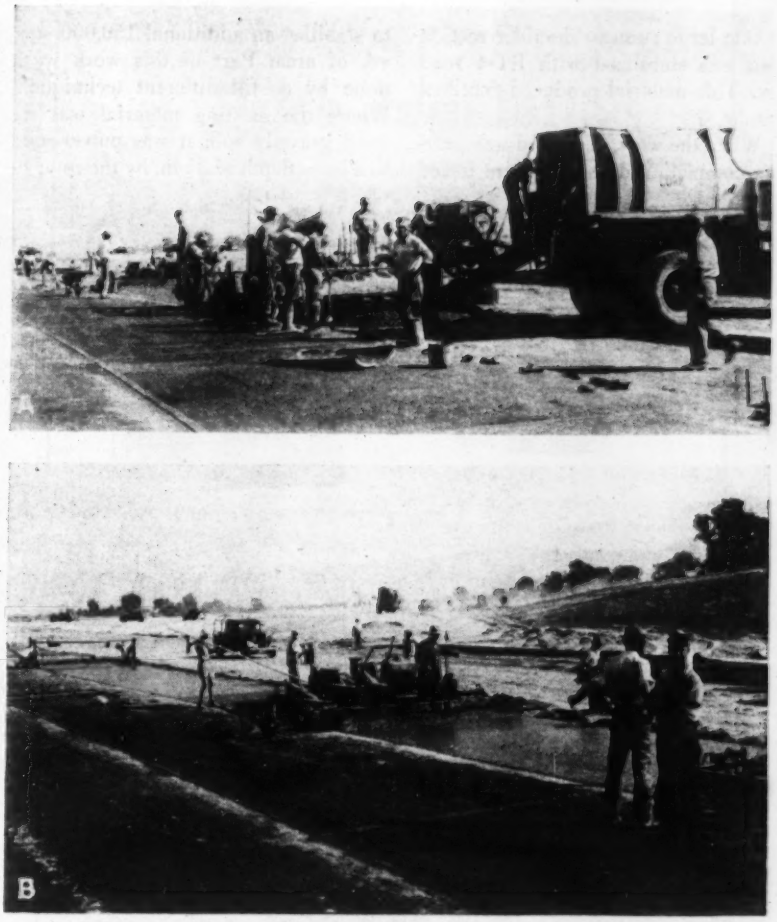


Fig. 4. Much of the pavement for taxiways, turnarounds and aprons was constructed with air-entrained concrete mixed on the job with truck-mounted mixers (A). A self-propelled finisher followed about 50 ft. behind the spreader (B).

New mixing method developed

A procedure that is considered
ique was originated for improving
e uniformity of the surfacing ma-
rial. The gravel was spread in strips
out 10 ft. wide, as was the cut-back
phalt. The gradation of gravel in
djacent strips would sometimes vary,
us producing some strips rich in
phalt and some lean strips. To cor-
ct this condition, the tillers were
erated in a series of diagonal or
zzag figure eight trips at an angle
about 45 deg. to the runway. This
ethod blended the asphalt uniformly
d at the same time corrected the
ggregate gradation.

Following this treatment the mix-
re was spread flat with blade grad-
s, unless rain threatened, when it
as windrowed until it could be
read to cure. After about ten days
curing, the mixture was spread ac-
rately to grade and rolled with rub-
r-tired rollers and 5- to 6-ton tan-
m steel-wheel rollers. The kneading action of the rubber-tired rollers proved very beneficial.

During the ensuing two weeks, the surface was continually "honed," minor ruts and waves being trimmed with a blade grader. Next, rubber-tired rollers were used to complete the compaction work. Areas that developed a brown and dry appearance were given an extra asphalt application and remixed. Areas showing excessive fattiness or instability were treated by "working in" additional dry gravel.

After three weeks to 30 days of curing, the surface was swept clean with mechanical brooms and a seal coat of 0.3 gal. per sq. yd. of RC-2 cutback asphalt was applied. The bituminous material was covered immediately with ⅜-in. slag chips in sufficient quantity to retain 15 lb. per sq. yd., the chips being rolled in at once with the 5- and 6-ton tandem rollers. Before allowing airplane traffic to use the finished pavement, the loose chips were removed with mechanical sweepers.

Variations in this technique were employed on the access roads. On this work 8-in. of gravel soil was laid over a selected subgrade, both subgrade and surface being compacted to 95 percent of maximum density. The top 3 in. of the surface then was pulverized with rotary tillers and 1.5 gal. per sq. yd. of RT-8 road tar applied in three increments. After each application, the work of mixing proceeded with the tillers and blades.

Compaction was secured with the normal traffic on the road, except for the edges, which were rolled with steel rollers. A seal coat of 0.3 gal. per sq. yd of RT-8 road tar was next applied and covered with ⅜-in. slag chips rolled in place. The RT-8 tar, while producing an excellent seal coat, was very stiff to work in the mixture. Road tar of grade RT-4 to 6 proved easier to manipulate for this work, except in the hottest weather.

One large runway shoulder section also was stabilized with RT-4 road tar. This material produced excellent results.

When the work described was nearing completion directives were issued to stabilize an additional 150,000 sq. yd. of area. Part of this work was done by a still different technique. Where the existing material was a good gravelly soil, it was pulverized to a loose depth of 3½ in. by the rotary tillers. No prime coat was used, but 1.5 gal. per sq. yd. of MC-2 asphalt was applied in three increments, with partial mixing with the tillers after each application, followed later by complete mixing with both the tillers and bladers. Before the seal coat was applied a tack coat of 0.2 gal. per sq. yd. of MC-2 asphalt was applied and allowed to soak in. Finally, 0.3 gal. of RC-2 asphalt per sq. yd. was applied and covered with ⅜-in. slag chips.

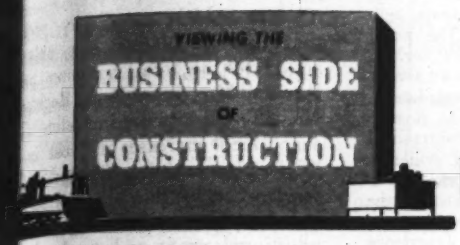
Fig. 5. In building the mixed-in-place bituminous shoulders, patrol graders (A) were used to dry out the gravel soil for the 2½-in. wearing surface. The gravel and the MC-2 cutback asphalt were mixed and spread with rotary tillers and patrol graders working in teams (B). After curing, the material was compacted with rubber-tired and smooth-wheel rollers. Thirty days after mixing (C), a seal coat was added, covered with ⅜" slag chips and rolled.

Progress and personnel

Prime contractors were Brann & Stuart, Inc., of Philadelphia, Pa., represented by D. J. LeTourneau, project manager, and D. J. Winner, superintendent. Work by this firm included site preparation, excavation and compaction of 3,781,000 cu. yd. of earth, construction of 420,372 cu. yd. of mechanically stabilized gravel base, and preparation of 9,368,000 sq. ft. of subgrade. George M. Brewster and Sons of Bogota, N. J., assisted in the excavation.

Kingston Bituminous Products Co., Kingston, N. J., constructed 200,000 sq. yd. of crushed stone and bituminous concrete runways in 78 working days, or a daily average of 2,500 sq. yd. of completed 9-in. pavement. Barrett Paving Co., Trenton, N. J., laid 700,000 sq. yd. of bituminous stabilization between June 8 and Oct. 1, 1943; applying as much as 30,000 gal. of asphalt in one day. This firm averaged an equivalent of 0.6 miles of 20-ft. highway daily. Van Bro Construction Co., New York, placed 190,000 sq. yd. of air-entrained concrete with truck-mounted mixers between April 26 and Aug. 27, and Union Building & Construction Corp. of Passaic, N. J., placed 147,000 sq. yd. of air-entrained concrete with 27-E and 34-E pavers, and sealed 200,000 sq. yd. of runway with RC-2 cutback asphalt.

The work was done by the Corps of Engineers under the supervision of Col. H. B. Vaughn, Jr., and Col. Albert H. Burton, district engineers, Philadelphia; Maj. George E. Louttit, area engineer, and Edward J. Parker, field representative. Tuttle, Seelye, Place & Raymond, New York, as architect-engineer, was in charge of surveys, design and supervision. This firm was represented by Burnside R. Value, project manager, Aksel Jorgensen, chief engineer, Henry W. Campbell, resident engineer and the writer as chief airfield engineer.



Price Regulation In the Construction Field

Morway Pickett
Count & Pickett, Counselors at Law
New York, N. Y.

tor's Note—All prices for construction work are under government trol to limit, to authorized wage increases and material costs, the prices may be asked even under publicly invited competitive bids. Special ords and proof of compliance must be kept by all contractors regard- of whether pricing is a fixed sum or some form of cost-plus. War con- ction, even for the Army or Navy is no longer exempt from such controls. author outlines the regulations and record keeping applicable to con- ction and suggests actions that may help to secure more equitable tment of builders.

ss REPORTS of recent prosecution violations of governmental regula- s affecting the building industry close that a large segment of the ustry is unfamiliar with the many ulations to which they are required conform. Least understood of the ulations affecting the industry is of the Office of Price Administra- , which has exercised specific con- s over the industry since Novem- of 1942. The recent general re- on of the regulation (known as ised Maximum Price Regulation 251), which became effective on g. 26, 1944, expands the scope of regulation and provides for new trols. Since definite and specific ies are imposed upon builders, it important that the members of the ustry review the prescribed pricing record provisions and avoid the stic penalties ensuing from violat- of the regulation.

Scope of the regulations

ll construction services and sales nstalled building materials are en- passed within the regulation. The ress purpose of the control, as ed by the Price Administrator, is prevent an escalation of charges in ess of those which prevailed in rch of 1942, in the entire industry. Thus, any installation or removal of building materials in any construction project of any kind, is subject to the pricing and record provisions of the regulation. By specific enumeration there is also included within the scope of the regulation, excavation, demolition, site clearance, landscaping and water well drilling. Excluded from the regulation—but not from price control—are services covered by specific price regulations, such as those relating to the servicing, repairing or rebuilding of building equipment and machinery. There are some services which are generally excluded from pricing regulation, such as services of architects, consulting engineers, other than engineering firms engaged in contract construction. All work performed for governmental agencies has been brought within the coverage of this new regulation. Every phase of construction, therefore, comes within the purview of Revised Maximum Price Regulation No. 251.

Acting for several member firms H. E. Foreman, managing director of the Associated General Contractors of America has protested the Revised Price Regulation No. 251 and asked that it be rescinded. In a brief filed Oct. 2, 1944 it is pointed out that construction requires skill and experience comparable with that of engineering and architectural professions (which are exempt), that the field is highly competitive and that enforcement of the regulation will delay war construction and increase both cost and manpower requirements of contractors and the federal government.

While pricing practices of long recognition in the building industry are adopted as the basis for pricing under the revised regulation, nevertheless the contractor must conform to a base fixed as to time in applying the permitted formula.

Unit prices

Unit price charges, such as per hour, per foot or other time or measurement basis, may not be higher than the highest price charged, during March of 1942, by the contractor to a purchaser of the same class. If the contractor had no specific rate but had a definite price figuring method during March of 1942, then the maximum unit price must be consonant with the price figuring method which was employed during the base period. The March, 1942 unit rate or the price resulting from the March, 1942 pricing method may be adjusted by the contractor so as to give effect:

(1) to increases in the cost of materials since March, 1942, but not in excess of their maximum prices; and

(2) to increases in labor costs up to and including Oct. 3, 1942, and authorized wage increases since.

A contractor who did not, during the base period, March of 1942, perform the type of work which would enable him to compute his maximum price upon a unit price basis, is re-

quired to obtain formal approval from the local office of OPA of a proposed maximum price.

Cost-plus fee jobs

Where the contract is on the basis of cost-plus-a-percentage-of-cost, or cost-plus-a-fixed-fee, or any other basis of addition of overhead and profit to cost, the maximum price is the total of the following:

(a) Cost of materials, including installed equipment, not exceeding the maximum prices of said materials.

(b) Actual labor costs, inclusive of authorized increases.

(c) Other actual direct costs, such as (1) cost of sub-contracts at ceiling prices; and (2) rental value of construction equipment not in excess of the maximum rental rates applicable to the rental of such equipment.

(d) A margin inclusive of administrative and overhead costs, selling expenses and profit but exclusive of any reserve for contingencies. Such margin must not be in excess of the seller's highest estimated percentage margin on a comparable job during the period, Jan. 1, 1939 to March 31, 1942. Such margin must be established by reference to the contractor's records or other satisfactory evidence. In the event that the contractor did not do business under a contract of this type during the base period, then he may compute the margin of overhead and profit based upon a comparable job and his own general experience or the industry's experience on such comparable jobs. The contractor using the latter method will be in violation if he is unable to support his adoption of a maximum cost-plus price by records of his own or by comparable jobs performed by competitors, since such records must be produced upon the request of the Office of Price Administration.

(e) Extras or allowances for decrease in the amount of work must be computed upon the same basis as the computation of the maximum price itself.

Lump sum jobs

The lump sum contract may not exceed the sum of the following factors:

(a) Estimated cost of materials. In estimating the cost no more than maximum ceiling prices must be used.

(b) Estimated labor cost not exceeding the rate of wage prevailing in the area of installation on Oct. 3, 1942 and approved wage increases since the latter date.

(c) Other estimated direct costs, including (1) the cost of sub-contracts at ceiling prices; and (2) the rental rates applicable to rental of equipment.

(d) An estimated reserve for reasonable contingencies.

(e) A margin that will include administration and overhead costs, selling expenses and profit. The profit may not exceed the seller's highest estimated percentage margin on a comparable job during the period Jan. 1, 1939 to March 31, 1942. This margin must be supported by the contractor's records or other satisfactory evidence. If for some reason the contractor is unable to figure his margin upon the foregoing basis, he may adopt a margin based upon his own general experience or the industry's experience for comparable jobs. However, the adoption of such a margin must be supported by records or by comparison with jobs performed by other contractors. It is important to note that the regulation requires that upon request such records must be produced for inspection by the Office of Price Administration.

Computing increased labor costs

Within the term "Increased Labor Costs", as applied to all these pricing methods, are included such additional payments as are required for old age benefits, unemployment compensation taxes, workmen's compensation and public liability insurance. However, the increases in wage rates may be only those granted by the employer during the period from March 1, 1942 to Oct. 3, 1942, the date of the establishment of the Office of Economic Stabilization. Since the latter date, the only wage increases that are authorized are those which have received formal approval from the National War Labor Board. In adjusting the base period price, only these authorized wage increases may be added without application or report to the OPA. The recent extension (July 7, 1944), by the NWLB, of wage control to all building contractors, including those employing eight or less workers, formerly exempt from wage stabilization regulation, empowers every contractor to add approved increased wage costs automatically to his base period experience. However, such previously exempt contractors who made wage increases during the period between October 3, 1942 and July 7, 1944, may not add such increases to their base period rate. It is advisable for such contractors to obtain approval from the NWLB for such increases made during the interim period of exemption. This will enable them to automatically include such increases in the labor cost in computing their maximum prices.

In the construction industry, profit and overhead have been reduced to a percentage of cost. Unlike other regulations which specifically provi that increased costs may only added to the total maximum pri Revised Maximum Price Regulati No. 251 permits the inclusion of sanctioned increases in cost in "Price Determining Method.". T effect of using this different form is to permit the contractor to obt additional profit and overhead co puted upon the increased labor a material costs.

Many difficult questions of interp tation arise in actual operation und the regulation and cut across methods of pricing. They are facto which have an important beari upon whether the job will result a loss or profit to the contractor. F example, the productivity of mech ics and labor in the construction dustry is less today than it was March of 1942. This decrease labor productivity is a variati which must be taken into conside tion in computing job costs. Y the question presents itself as whether it is permissible under t price control regulation, to give eff to this change in determining t maximum price. The language the regulation—"actual labor cost —requires computation based up the labor rates prevailing in or a plicable to the area of installati on October 3, 1942. It is reasonab to include within the meaning of t phrase "actual labor costs" a change in the productivity rate labor which increases or decreases t cost thereof. The determination the contractors' maximum price ma therefore, give effect to this factor.

Rental allowance

Construction equipment rent have also experienced a considera cost variation since March of 19 Where the contractor uses anothe equipment he may be protected adopting the procedure hereinaf outlined. It is in using his own equi ment that a difficult problem p sents itself. For example, due Office of Defense Transportation r ulations, the present cost of truck is in excess of that which prevai in 1942. The regulation adopts flexible method of determining t amount to be allocated by the co tractor to the use of his own equi ment. It provides that he may clude in the cost price of the jo the rental value of the equipment

ined by the cost the contractor ld have to pay for the hire reof, paying no more than the imum price as controlled under eparate regulation.

Provisions of price relief

Other than the relief afforded by adjustment provisions previously ussed, the regulation permits the e Administrator or his representa-s, to grant higher ceiling prices er certain specified conditions. ere a local shortage of construc-services is threatened or a gov-ment contract may be jeopardized adherence to prevailing maximum es, the Price Administrator is horized to increase the ceiling es. These situations require spe-application to the OPA and, there-, are merely adverted to herein. However, the contractor may take s to protect himself against in-ses in cost of labor or materials. regulation permits the parties to agreement for construction serv-to provide that the maximum e may be adjustable to the au-rized maximum price in effect at time the service is supplied or materials are installed. The in-ion of such a provision in an ement removes the hazard con-nting every contractor of lawful reases in the cost of labor or mate-s being authorized subsequent to date of the execution of the con-t and prior to performance.

Specific maximum prices

Each Regional Administrator is au-rized to adopt a schedule of maxi-m prices stated in dollars and cents computed by a fixed standard for pecific type of work. Thus, the ional Price Administrator may, the area under his jurisdiction, dollars and cents price per square d for various kinds of paving or ice at so much per hour for truck xcavator operation. It is antici-d that these dollars and cents pric-orders will mainly control hourly ther unit charges for repair and ntenance work.

n areas where such local orders e been or are about to be insured, important to examine the orders, he proposed orders, since they rsede any other pricing method are subject to revision, amend-t or revocation at any time by Price Administrator. Associations should make it a point of requesting consultation with the Regional Administrator before the issuance of such orders. In this way the industry will be in a position to obtain equitable treatment.

Before entering into a contract or rendering any service subject to the provisions of Revised Maximum Price Regulation No. 251, the contractor must notify the purchaser of the existence of the regulation. Should the purchaser request a copy of the regulation, the contractor must make it available to him at the contractor's place of business. All contractors must keep records with respect to each job which set forth:

(a) the name of the purchaser;
(b) location of the job;
(c) the date of the transaction;
(d) a description of the commodities and services involved; and—
(e) a full statement of the method by which the maximum price was calculated. In setting forth the maximum price, the contractor is required to refer to the applicable pricing section of the regulation under which the job was figured.

In addition, the seller must maintain records similar to those that he customarily kept in the past.

So long as the Emergency Price Control Act of 1942 as amended remains in effect, these records must be available for inspection. Power, furthermore, is vested in the OPA to require the contractor to submit such have been or are about to be issued reports as that office may require.

At the time of final settlement of the contract or sub-contract, the owner and contractor parties thereof, may request of the persons with whom they respectively dealt, that they furnish a statement that the price for the construction services or installed building materials supplied by them was not in excess of the maximum price determined in accordance with the OPA regulation—Revised Maximum Price Regulation No. 251. Purchasers desiring to protect themselves from the penalty provisions of the Act, should avail themselves of the right to demand a certificate of compliance before making final payment.

Effective Oct. 10 a supplemental OPA order, No. 76, permits service suppliers subject to more than one price regulation (applicable particularly to equipment and machine rental firms) to apply for permission to operate under the provisions of only one regulation. However, authorization will not be granted to supply such service under Revised Maximum Price Regulation No. 251 exclusively.

Evasions and penalties

Any device or subterfuge designed to obtain a higher than ceiling price constitutes as much a violation of the regulation as an outright overceiling price. Among the specific practices prohibited by the regulation are:

(a) charges by way of commissions;
(b) charges for extraneous services;
(c) transportation arrangements;
(d) trade understandings;
(e) requiring the purchaser to furnish materials not in acordance with previous practices;
(f) failing to supply usual services;
(g) lowering the quality of materials or equipment below that called for in the specifications; and
(h) making the terms or conditions of the contract more onerous than those in effect or available to an owner or contractor during the period Jan. 1, 1939 to March 31, 1942. This includes decreasing the period for which credit is extended or reducing cash discount.

In addition to the criminal penalties, civil enforcement actions, such as suits for injuction requiring the maintenance of appropriate records and suits for three times the amount of any overcharge, the OPA is also authorized to suspend or revoke the general license under which all contractors are now permitted to do business under the price control program. During the period of suspension, the violator may not engage in any activity for which his license is suspended.

While the general purpose of price control of the building industry is commendable, nevertheless, complaints that the burden imposed is onerous will be forthcoming. Indeed, such complaints have been forthcoming in every industry which has been subjected to regulation by the OPA.

No doubt it is true that in certain localities competition is so keen that there is little justification for price regulation. However, there are signs which indicate that the industry is under surveillance and that those contractors who fail to make an attempt to conform to the pricing and record-keeping requirements of the price control program will be called to account.

ENGINEERING ABROAD AS SEEN BY ENR EDITORS

Mosquito Control Practice in Panama

A. N. Carter
Assistant Editor, Engineering News-Record

***Contents in Brief**—Mosquito control continues to be a major health measure in Panama. Swamps near several towns outside of the Canal Zone are being drained by the construction of lined ditches laid to accurate grade. Where swamps cannot be drained, larvicidal work is carried on, diesel oil and Paris green being used for this operation.*

MALARIAL mosquito control in Panama, inaugurated 40 years ago in the Canal Zone by the engineers of the Panama Canal, continues as a vital sanitary engineering activity in that country. When the American canal forces took over, yellow fever was epidemic in the terminal cities and malaria was universal throughout the Isthmus.

These two diseases had made workmen's graveyards of the region traversed by the old French canal works and the Panama R.R. To protect the American workers, the cities of Panama and Colon, and indeed every settled place in the Canal Zone, were given a cleaning from mosquito breeding places of an intensity few localities in the world have ever undergone.

The story of how Dr. William C. Gorgas and his chief sanitary engineer, Joseph A. Le Prince, banished yellow fever and malaria from the American-controlled territory is an epic chapter in the history of the war of sanitarians against mosquito-borné disease. This story was in my mind when I arrived in modern Panama City at the end of my trip over the Inter-American Highway (*ENR* June 24, 1943, p. 914), and curio prompted inquiry as to present m quito-control measures.

All the mosquito-control work be described is outside the C Zone. The Zone Administration s 1914 has kept the canal territory r tively free of malaria, but work is needed in much of the Republic Panama. From 1933 to 1939 Rockefeller Foundation did s good work on this vast problem, in 1943 the office of the Coordina of Inter-American Affairs in coop ation with the Panamanian nati government continued the opera as part of a mosquito-control progr throughout much of Central South America. Some of the proj are aimed at bettering health co tions in existing population cent and others are planned for contro sparsely populated areas into wh workers are moved to produce materials needed by the United tions.

In general, the work in Panam characteristic of present Latin A ican operations. Here the operati include: (1) Construction of dr age and other control works; maintenance of completed wor (3) location of mosquito-breed areas, and (4) larvicidal control. this program, from January 1 April 1 of 1944, the Coordina office provided $53,920 and the ernment of Panama $13,480.

Howard D. Schmidt, formerly s sanitary engineer in Tennessee, i direct charge of operations, with fices in Panama City. He is assis by Captain Samuel L. Davies, merly senior sanitary engineer the Arkansas State Board of He Guillermo Rodriguez is sanitary

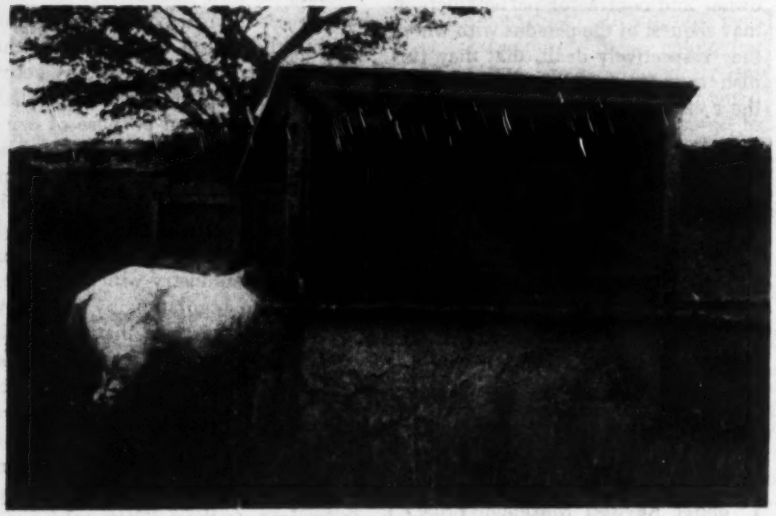


Fig. 1. Department entomologists make many of their "catches" in planning mosquito-control operations in horse-baited traps.

neer for the Servicio Cooperativo Interamericano de Salud Publica, which is the Panamanian cooperating agency.

Serving under these men there is a permanent staff of entomologists and other specialists, along with a labor force (sometimes several hundred) of construction and maintenance workers, sprayers and makers of concrete products. All work is carried out on a force account basis using local labor.

Operations are systematized

Mosquito eradication in Panama combines elimination and treatment of breeding places. These operations cannot be all inclusive, but must be limited to populated centers and outward from these points to slightly beyond the migratory range of mosquitos. The principal malaria vector in Panama is the *Anopheles albimanus* mosquito, and about a mile is ordinarily the maximum distance it travels in sufficiently large numbers to be a menace.

In general, the places where malaria control is most needed are first determined and activities are then organized and concentrated at these locations. Preliminary work in a suspected area consists of making mosquito "catches" using the horse-baited traps illustrated in Fig. 1. Reference to the accompanying map will indicate how these mosquito traps are located about a community being investigated. The trapping operations include, naturally, a general reconnaissance of mosquito breeding conditions. Further information on the prevalence of the disease is obtained by taking "blood-smears" on school children. This test is made once a year in all the principal communities, a survey force of three entomologists being employed in this work.

When the breeding areas have been located, local conditions determine whether the control procedure shall consist of complete eradication of the breeding places by drainage, or control of propagation by chemical treatment of these areas. Full drainage is the preferred procedure.

High type drain construction

Drainage practice is best indicated by actual plans and views (Figs. 2 to 3), plus data on a specific operation. The accompanying map shows the drainage plan for the town of Anton;

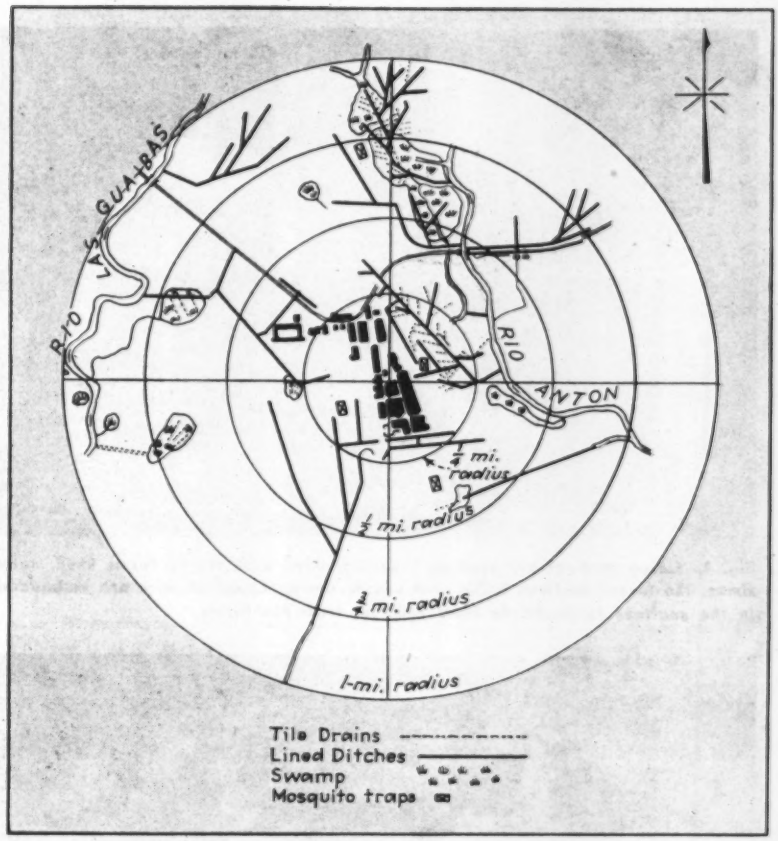


Fig. 2. Drainage systems for mosquito control of the small town of Anton. The work required in many communities is as extensive, and in some much greater.

this plan is typical and consists of a combination of tile drains and lined ditches to drain all the wet areas that are found to be mosquito-breeding grounds. It will be noticed that a considerable operation is necessary

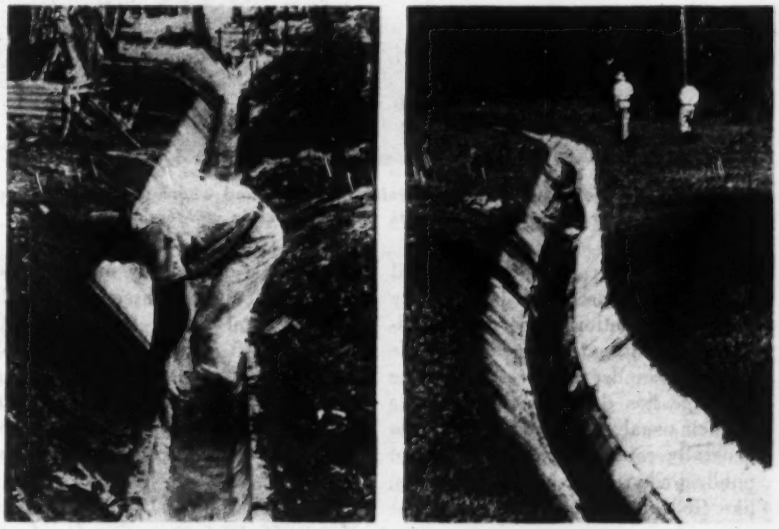


Fig. 3. Open drains are paved with concrete sections about 2 in. thick. Hand laborers dig and line the ditches. Right: A completed drainage ditch showing the gradual slope of the waterways. The sod growth along the sides eliminates erosion during periods of maximum flow.

Fig. 4. Lining sections are cast at a central yard with sturdy forms used many times, the invert sections being cast upside down. Loops of wire are embedded in the sections to facilitate their removal from the forms.

Fig. 5. Drawing water at a new community well, provided where drainage ditches for malaria control deprived residents of their former water supply.

to provide full drainage for this small community. Closely allied with every drainage operation is the responsibility of providing water for potable uses and laundry purposes, where the drainage has deprived the residents of their usual supply. This operation generally consists of construction of public wells to which the women go, like Rebekah of old, to draw water (Fig. 5).

Construction activities are divided into work units or jobs, each of which usually comprises a complete drainage system in itself. The drainage works for a community may include from one to eight of these jobs, which vary in total length between 3,000 and 20,000 ft. From four to eight of these units are kept in operation by a supervising staff consisting of one sanitary engineer, one draftsman, six surveyors and an accounting staff of eight.

The construction force numbers about 360 laborers and a few foremen. Their work consists mainly of digging and lining ditches, and moulding the concrete lining slabs. Incidentally, in most Panama soils the ditch grades may not exceed 2 percent or the banks will scour, and with ditch grades flatter than 0.2 percent the ditch is subject to clogging. With the type of labor available, these restrictions necessitate careful setting of the direction and grade lines.

A typical drainage ditch is shown in Fig. 3. The bottom of the channel is paved with pre-cast concrete sections—the so-called Panama invert—which is 30 in. long, 2 in. thick and of 14 in. inside diameter. The ditch sides are paved with pre-cast flat slabs or liner plates 2-in. thick; slabs 18 x 30 in. are used on tangents and 18 x 12-in. slabs on the curves. In either case, the 18-in. side is laid parallel to the 1:1¼ side slopes.

The inverts and slabs are produced at a central yard near the job, (Fig. 4, being made in steel forms of 1:2:4 plain concrete. Using a 3½-cu. ft. mixer, a crew of five laborers and a foreman can turn out about 50 inverts and 50 side slabs per day, besides storing the finished products in the yard and loading trucks for delivery to the job.

Ditches built by hand

Ditch construction is carried out by hand. The cut is first made with vertical sides and, to reduce scour and to avoid a muddy bottom, the inverts are laid as closely as possible behind the diggers. The ditch sides are then sloped and the slabs laid (Fig. 3). The inverts are placed with open joints, but the V-joints of the side slabs are filled with mortar. One foreman, two invert layers and 24 laborers is the usual size crew for ditching and tile laying.

From January, 1944, to the end of March, 1944, a total of $51,733 was spent on the construction of 23,393 ft. of these lined ditches, making the average cost of ditch $2.21 per linear ft. Wages for common labor within 80 miles of the Canal Zone are $2.00 per 8-hr. day, but farther out in the country they drop to $1.50. Foremen, invert layers and masons get as much as $4.00 per day on some jobs.

Only a few men are required to maintain the completed drainage structures. The work consists primarily of cutting the vegetation along the ditches, and cleaning and inspecting the structures. The usual practice is to cut the vegetation about every three months, this work being done by day labor. Cleaning and repair

erations are carried out by full-
me employees who carry shovels
d "walk" the ditches on a regular
hedule, removing coconut shells
d other clogging debris. Little silt
eeds to be removed from the water-
ays, once the shoulders have be-
me stable. Also, only limited re-
airs are required, as few of the
ing materials are misplaced or
oken once they are firmly set.

Larvae destruction practice

Drainage is the preferred practice
r control, but where this is imprac-
cable because of lack of labor,
oney or materials, or for other rea-
ns, larvicidal work is carried on.
he beginning and the end of the
iny season are the two periods when
is operation is most needed and can
applied most effectively. When the
ins start the swamps are filled with
ater, which remains stagnant for
ny days, or until sufficient rain has
llen for flow from the swamps to
gin. At the end of the rainy season
e swamps may stay flooded for sev-
al weeks, making ideal breeding
aces.

The crews engaged on the larvici-
l work prefer to use Paris green
st instead of diesel oil because of its
eater ease of application. However,
esel oil is used more frequently than
ris green because it is easier to ob-
in. Use of Paris green dust is
eaper and more effective in certain
asons than is oil spraying.

Application of the Paris green dust
in accordance with standard prac-
e in the malaria areas of the United
ates. Generally, the chemical is ap-
ed in the wet season in powder
rm by workmen on foot (Fig. 6).
fore application of this dust (which
ls the surface-feeding larvae only,
t the adult mosquitoes) it is mixed
h an inert extender, hydrated lime,
the proportion of 2 parts Paris
en to 98 of lime. This mix—much
eaper than an equal amount of
aight Paris green—has ample tox-
ty to kill the larvae.

Malaria rates in general have
opped in the Republic of Panama
er the past year, both in commun-
s where work has been carried out
d in others where no work has been
ne. For this reason, the statistics
the disease rates cannot be com-
ed at the present time. However,
is significant to note that in every
n on the Inter-American High-

Fig. 6. When the mosquito breeding areas cannot be drained, Paris green applied as above is used as a temporary control; diesel oil also is employed.

way, the rate is below five percent as indicated by "blood smear" indices taken in 1944.

Equally important but more difficult to evaluate are the results of the control activities in protecting the health of military personnel from the United States who frequent the interior towns. Listed under related or secondary values of the program is the fact that more healthful laborers may be drawn from the interior towns for work in the Canal Zone or on military reservations, while increased delivery of war materials results with a reduction in the outlying areas of those suffering from malaria.

Health and sanitation activities in the Office of the Coordinator in Washington are under the general direction of Col. A. R. Dreisbach, M.C., director of the division, and Lt. Col. H. B. Gotaas, Sn.C., assistant director and chief engineer.

Four States Help Finance Postwar Plans

Four states—New York, California, Michigan and New Jersey—now give financial assistance to local governments for the preparation of plans and specifications for postwar public works, the American Public Works Association reports.

New York in 1943 was the first to provide such aid when the temporary state commission for postwar public works planning was granted $3,000,000 for state public works planning and grants to local agencies on a matching basis. The state pays one-half the cost of preliminary plans up to one-half of 1 percent for the detailed plans if the total cost of planning does not exceed 2 percent of the cost of construction.

The other three states entered the field this year. California appropriated $10,000,000 of which $7,000,000 is to be used for plans and specifications and $3,000,000 for site purchases. Assistance will be given local units through the state reconstruction and reemployment commission, which was voted $100,000 recently to expand its staff and set up two regional offices.

Michigan appropriated $5,000,000 to defray one-half the cost of local public works planning. The Michigan planning commission approves the applications of local governments for funds to defray the cost of surveys, plans and specifications.

New Jersey created a department of economic development to supervise allocations amounting to $500,000 to local governments for plans and specifications.

Airfields for the Invasion of Italy

Col. J. O. Colonna
Commanding Officer, Army Air Forces, Engineer Command
Mediterranean Theater of Operations

Col. J. O. Colonna, with the army en neers since 1922, led the experienc airfield builders he tells about here the subsequent invasion through sou ern France.

***Contents in Brief**—Spitfires operating from Sicily could stay over the Salerno battlefield for only 15 minutes, hence fields on the mainland were essential. Aviation engineers made reconnaissance on D-day and moved equipment in during the night. On D+1 they built a 4,500-ft. runway, and at daylight on D+2 fighters landed. Other airports were built just behind the moving front as it advanced to Naples, Rome and beyond. Operation experience is given on dirt, grass, volcanic ash, pierced plank and permanent runway surfaces. The forces who built the fields across Italy took that experience into the recent landings and phenomenal advance in southern France.*

AFTER THE STEPPING STONE of Sicily was taken, it was necessary, for successful invasion of Italy, to seize a large port on the Italian west coast. Strong air support was essential for such an invasion, limiting the point of the thrust to within fighter range of Sicily. Under such conditions, Naples was the practical objective.

Nearest Allied-held land suitable for airfields was at the base of the Milazzo peninsula (Fig. 2). As soon as the ground forces had cleared this area of the enemy, airfield reconnaissance parties selected five sites suitable for fighter strips. Four of these strips were located end-to-end along the coast with only about a mile and a half from the end of one runway to the beginning of the next. Many fields were built also in the Catania plain and two at Termini Imerese near the middle of the north coast of Sicily.

But even from the northernmost of these fields the Spitfire plane could not reach the beaches at Naples with sufficient fuel for effective action. Consequently, the invasion was set for Salerno. Knowing the limitations of Allied aircraft, it should have been only a simple calculation for the Germans to determine where such an attack probably would take place.

From the Milazzo fields the Spitfires, used auxiliary gasoline tanks, could stay in the air over the beaches for about 15 minutes. Thus, every 15 minutes, a new formation of Spitfires left Milazzo for the beachhead and there was a continuous procession of Spitfires going to and returning from the battle area. Some additional cover was furnished by Lightnings, operating from the Catania area.

Landings at Salerno, on Sept. 9, 1943, took the form of pincer movements with the British 10th Corps on the west attacking the Salerno beaches while the American 6th Corps on the east attacked Paestum. There was a distance of about 20 miles between the centers of impact of the two attacks.

To relieve the long distance flying of the fighter aircraft it was necessary to quickly construct airfields on the Salerno beachhead and conduct operations from there. Aviation Engineers with the D-day landing forces consisted of one-half of a British Airdrome Construction Group attached to the 10th Corps, with the mission of rebuilding Monte Corvino airfield or building a new fighter field, whichever could be done most quickly. About two-thirds of an American Aviation Battalion accompanied the 6th Corps, with the mission of constructing a fighter airfield as quickly as possible.

Just before dark on D-day a reconnaissance party from the American Engineers landed from an LST at Paestum, and found that the best pre-selected site was not held with sufficient security to justify construction and proceeded to a safer, if less desirable, area. By this time it was dark and after walking the length of the center line at several slightly different angles, the final center li was selected and staked out by lini up flashlights. The site was on sandy loam soil, very dry and du as there had been no rain for seve months. The land was in cotton, matoes and some pasture, and the ru way crossed two ditches bordered rows of large trees.

Airfield ready on D+2

Men and equipment of the Aviati Engineers came ashore, un-wate proofed their equipment and asse bled at the site so that by the fi light of D+1 day, September they were ready to work. Trees we felled, ditches filled and back-tamp so that by dark of D+1 day a ru way 4,500 ft. long had been grad and rolled. Taxiways and dispers for several squadrons of airplan were ready. Sprinkling with wat was carried on from the very fi in an effort to control the dust.

The XII Air Support Comman aboard the command ship, was no fied that the field would be ready f operation at first light of D+2 da Our first customers were some P-38 one of which had the brakes shot o and overran the runway. It crash into the water-distributing trail killing two men, destroying the P-3

and damaging our priceless water trailer beyond hope of hasty repair. The pilot, however, was uninjured. Shortly thereafter a flight of Spitfires arrived. These airplanes had been furnishing cover for the beachhead when an urgent call was made for a strafing mission. The planes were diverted to the fighting and ordered to land at the new field as the mission had used up the gasoline reserved for the return journey to Milazzo.

British construction

The British Airdrome Construction Group landing on the Salerno beaches found the Monte Corvino airfield in "No Man's Land" and located another site. The entire beachhead area was under hostile artillery fire so Tusciano field was built and operated within easy reach of German guns. The field was about 2,700 ft. long and was ready for operation on D+3 day. Meanwhile a second field, Asa, some 2,500 ft. long, was built and was ready for operation on D+5.

While these fields were far from ideal, they were invaluable at the time and afforded the longest runways that could be constructed. Both fields were operated with our artillery shooting across the field at the Germans who steadily returned the fire, but the Germans made no attempt to shell either field. It is probable that the dust and smoke haze that covered the entire battle area made it impracticable for the Germans to fire with effect upon individual airplanes on the field and therefore did not shell them.

As the beachhead was enlarged, additional fields were built in rapid succession. The American Aviation Engineers, now increased to two battalions, built Sele and Capaccio, while the British Airdrome Construction Group built Serrettelle and rebuilt Monte Corvino and Battipaglia. All of these were quickly constructed, "dry-weather" fields.

Fig. 2. Airfields for direct support of the American 5th and British 8th armies prior to the fall of Rome.

Surfaced runways

There was considerable concern at this time over the fact that there were no all-weather fields in the entire beachhead and the rainy season was imminent. As an emergency measure, pierced steel plank was unloaded over the beaches and laid at Monte Corvino directly upon the sod to provide a 3,500-ft. runway that would permit fighter operation rain or shine. This was definitely an expedient and the surfacing was not expected to stand up under heavy traffic or prolonged wet weather.

At the same time an all weather site, Gaudo, was selected near Paestum. Construction on this field was started on Sept. 17 and work was pushed at top speed, day and night—the field was completed in 40 days. The surfacing was a water bound macadam with a pierced steel plank runway 3,500 ft. long, with hardstands for 90 fighters. During this job the 5th Army gave us permission to use lights at night at the quarry and on the highway. Use of lights on the highways naturally was extended to all units in the area and was a great benefit to the entire invasion forces. We never payed for this benefit as no night attacks from hostile aircraft were ever directed at the roads.

October 1 found a reconnaissance party from the British Airdrome Construction Group in Naples examining the Capodichino airfield where they were interrupted briefly by the appearance of German armored vehicles. This was a sod field on a very good volcanic ash soil with good turf and excellent drainage. This, combined with the remarkable characteristics of the soil, enabled the field to be operated throughout the heaviest rains with all classes of aircraft.

There were numerous craters on the field as the Germans had done an extensive job of demolition on the field and on the hangars. A large number of wrecked trucks, airplanes and other debris had been strewn over the field by the Germans in an attempt to render it useless for paratroops or gliders. At the end of the day the reconnaissance party had a strip 150 ft. wide by 3,500 ft. long ready for

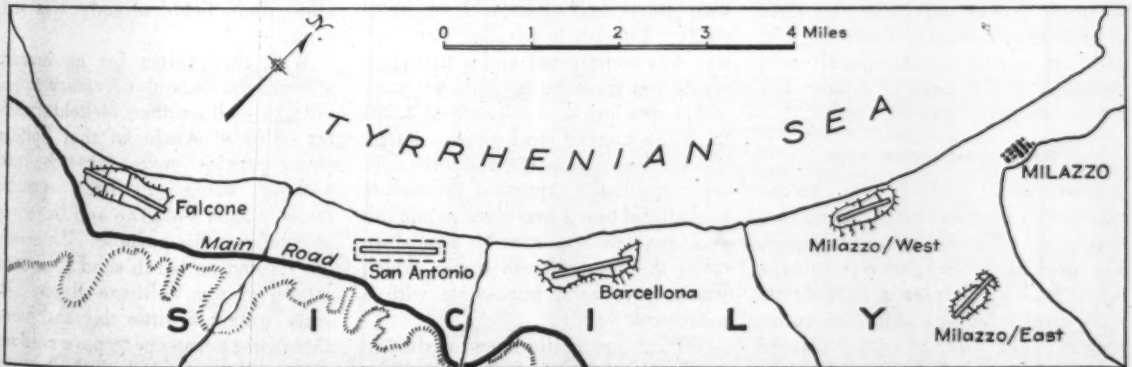


Fig. 3. Fighter airfields in the Milazzo area of Sicily. Space was so limited and fields so essential for invasion of the Italian mainland that the fields are less than two miles apart.

Fig. 4. First landing strip, Paestum, and first paved airfield, Gaudo, built in Italy by Mediterranean Army Air Force Engineers. Paestum was in use on the third day of the invasion. Note plane dispersal points around even the temporary field.

operation. Additional troops and equipment of this group arrived within the next few days to complete the task of cleaning the field of debris, removing obstructions to flying and tearing down some buildings while erecting others.

Progressive widening of the usable area of the runway quickly produced an area 1,300 ft. wide by 4,500 ft. long suitable for landings. The large area distributed the wear on the turf and was largely responsible for the fact that this field has stood up under the most intense air traffic, in spite of periods of continuous rainfall. At one time more than 500 aircraft were stationed at this field and there has been continuous transient traffic.

Good construction pays

Pomigliano airfield was reconnoitered by an Airdrome Construction Group as soon as it was captured. The field has a fine concrete runway 3,900 ft. long, bordered by culverts with drop inlet-tops along its entire length. The Germans had planted many bombs in the culverts and at points in the runway, which they had fired electrically. Most of the bombs had been exploded but a few had not and the latter were removed preparatory to reconstruction.

The largest job was rebuilding about 600 ft. of culvert. There were 23 bomb craters in the runway, some of which had been crudely refilled by the Germans. These were cleaned out, carefully backfilled and the runway surface was repaired, using concrete.

At the time the field was taken over there was some agitation for the engineers to do a quick job on this runway, merely backfilling the holes with gravel and opening the field to traffic. Instead, a parallel dirt runway was constructed and a first-class repair job done on the concrete runway, extending it to a length of 4,500 ft., using pierced steel plank. Afterwards, the responsible air force officers repeatedly expressed themselves as thankful that a first class repair job was done as the runway has since taken the most intense traffic, which would have been impossible with a patchwork job.

During the preliminary studies of the Naples area we had read all we could find about the volcanic ash in this area but were unable to determine whether or not it would be suitable for all-weather operations without some type of paving. Weathered volcanic ash was familiar to me from my experience at Schofield Barracks, Hawaii, where the material constituted as greasy and muddy a clay as I have ever seen, but we reasoned that the ash at the base of Vesuvius was recent and might have somewhat the same characteristics as a cinder track. Examination of the area during and after heavy rains gave indications that this material would compact and would be usable in all weather without paving, although it would be very dusty when dry.

We laid out and constructed, within two weeks time, the Cercola airfield on volcanic ash from Vesuvius. The area was under intense cultivation and clearing was a considerable problem—a number of houses had to be demolished and several wells were capped. The field proved quite satisfactory and two more were built. Vesuvius and Pompeii, around the base of the volcano, designed to accommodate medium bombers.

Further from the volcano the soil was not so good. The ash was older and had decomposed to a much higher clay content. Santa Maria and Marcianise were located on this soil but with consideration of available quarry sites. The fields were graded, drained and compacted in the hope that they also would prove all-weather without paving, but the soil was not good enough. However, by having the subgrades completed before heavy rains, it was possible to pave Marcianise in water-bound macadam giving a 5,000-ft. long runway of which 3,500x100 ft. was pierced plank. Santa Maria remained only a dry weather field because the number of all-weather fields already was sufficient.

With the project for an invasion at Anzio, it became necessary to provide two all-weather airfields within 80 miles of Anzio so that Spitfires could provide cover for this attack without using auxiliary gasoline tanks. Castel Volturno and Lago were selected for this purpose. These sites are located on beach sand soils at the mouth of the Volturno River. The soils contain so little clay and humus that it was necessary to pave both runways with pierced steel plank and to pave the entire taxiway and hardstand systems with the same material

or sommerfield track. Both of these sites presented serious drainage problems, provision of a large number of deep, open drainage ditches using very flat slopes solved the problem.

During the establishment of the beachhead at Anzio the immediate construction of a landing field was not so important as in other invasions, because our fighters were based only 80 miles away. Due to the shortage of shipping it was necessary to place as much artillery and infantry as possible on the beach during the first few days. Only a reconnaissance party of Aviation Engineers accompanied the D-Day force. A reinforced company of Aviation Engineers and 1,000 tons of pierced steel plank were held in readiness should the need to develop a landing field arise.

The small existing field at Nettuno had apparently been used by the Italians for airplane spotting of artillery fire, as Nettuno was an Italian artillery proving ground. This field was 3,000 ft. long with ammunition magazines at one end and barracks at the other. The soil was a very sandy loam well drained at the northwest end but swampy at the southeast end. The ground force engineers immediately tore down obstructing buildings and removed telephone and power lines. They also constructed a parallel crash landing strip. Later one company of the Aviation Engineers with 1,000 tons of pierced plank was sent to Nettuno. They graded and drained the runway, laid plank for 3,600 ft. and built dispersal areas, a difficult job because of the swampy nature of the ground that was available for construction of these facilities.

Nettuno field was rebuilt and operated within range of German artillery. Unlike Tusciano and Asa, there were no dust clouds to obscure the view, and considerable shelling, bombing and strafing was experienced. Nevertheless, fighters and transports operated successfully from this field without undue losses.

From this point on, the Aviation Engineers forces have followed up the advance of the Allied armies with a string of dry-weather airfields. The trend in construction of even advanced fighter fields is toward longer runways. Wherever possible we build them 6,000 ft. long, as the use of fighters as fighter-bombers requires much longer runways than formerly.

London Tube Shelters For Postwar Use

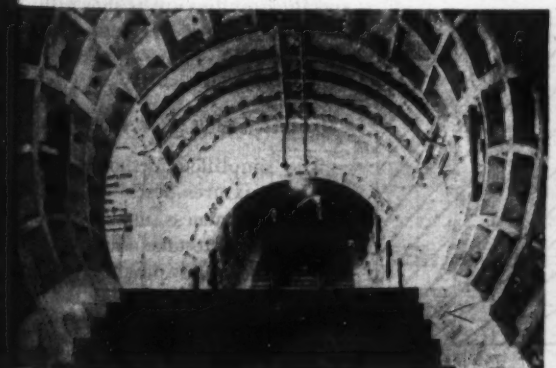
Tube-tunnel air-raid shelters built in London were described recently in the *Railway Magazine*, from which the following is abstracted.

Modern warfare involves a vast amount of construction work which is incapable of peacetime application, but in the railway sphere it also provides the incentive to improve transport facilities, and to provide new ones, which are of considerable utility in peacetime, but do not hold out such possibilities of financial return as to justify raising capital for their construction, apart from the incentive of war. There is a further class of wartime construction, as affecting transport facilities, in the form of works which are needed essentially for the purposes of war, but which can be so arranged as to have the possibility of peacetime use.

In this class are eight shelters built by the British government in 1941-42, and, although there is no obligation on the London Passenger Transport Board to buy them after the war, they were constructed in such a way that they might form the nuclei of deep-level express tube railways.

The London Passenger Transport Board in pre-war days had examined many possible schemes for the improvement of London tube transport, and among these were two for the approximate duplication of existing tube railways from north to south and from east to west by the construction of deep-level express tubes. These schemes were regarded as the ones most suitably adjustable to the government requirements for air-raid shelter, and, accordingly, those tunnels which have been built are on the alignment of such deep-level routes.

Originally, ten shelters were planned, eight on the north-to-south route, and two on the east-to-west route, but one on each route was abandoned by reason of engineering difficulties. The remaining eight were made about 1,200 ft. long (slightly longer than was at first proposed) and the eight shelters built are all situated below existing tube stations, four on the north of the river and four on the south. The seven that are along the line of route of a possible north-to-south express tube railway are Belsize Park, Camden Town, Goodge Street, Stockwell, Clapham North, Clapham Common, and Clapham South. The one on the east-to-west route is Chancery Lane. Each shelter consists of two main twin tunnels, 16 ft. 6 in. in dia., lined with reinforced-concrete segments, but with cast-iron linings at junctions.



Press Assoc. Photos.

...trance to tube shelter from subway station above. Right: Sidewall bunks are convertible into seats for 8,500 persons.

Rapid Proportioning of Asphalt Mixtures

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Newark Testing Laboratories, Newark, N. J.
and The Elk Associates, Inc., New York City

***Contents in Brief**—Designing asphalt mixtures has always been strictly a laboratory job. Simplification of the design and development of design charts has made field proportioning a possibility. Equipment required has been reduced to a volume that can be readily transported.*

AT THE PRESENT TIME, so far as is generally known, there are four methods of designing or proportioning asphalt mixtures. A fair appraisal of the four methods indicates the following:

Method 1. By far the most commonly used method is based on experience, instinct, appearance and the apparent workability of the mixture. This trial and error system is good when the control man is good and bad when he is not. At best, it leads to disagreements and misunderstandings between the contractor and the engineer or his representatives. One example of this system has been referred to as the "mix and dump" method.

Method 2. Not much better than the first, it limits by rigid specifications the materials that may be used. Aggregates are held to a very narrow gradation and asphalt cement can be varied through only a narrow range. The results are good when the material happens to hit the correct combination of voids. In other cases it is much worse than *Method 1* as it permits little or no adjustments.

Method 3. Developed by the author, it is based upon a graduated scale or formula for the surface area to be coated. In general, this method is quite accurate as the voids will increase or decrease as the average size of the aggregate varies. In the author's laboratory that principle has been applied through the use of the fineness modulus (F.M.) theory as developed by Duff Abrams for concrete but using the 200, 80, 40, and 10 mesh sieves instead of the sizes used for concrete sand. This change in sieve sizes from those commonly employed for concrete aggregates is made to permit use of the same sieves as those listed in the average specification for asphalt mixtures and because of the great importance of material passing the 200-mesh screen. Small adjustments are then made, if needed, as indicated by density tests made of samples taken from the first few batches and compared with the theoretical maximum density.

Method 4. Most positive and accurate of all schemes, but probably the least known or used, is the voids method, developed by The Asphalt Institute. It deals with the volumetric percentage of voids as found by testing a compressed sample and the calculation of the percentage of bitumen required by weight.

The principle of *Method 4* is illustrated by Fig. 1. At the top of the voids area, 2 percent is allocated as a reservoir of space for the expansion of the asphalt cement in hot weather. The next space, 22 percent, is to be filled with the bitumen and is multiplied by the specific gravity of the asphalt cement (1.03 is an average specific gravity).

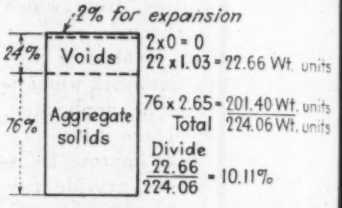
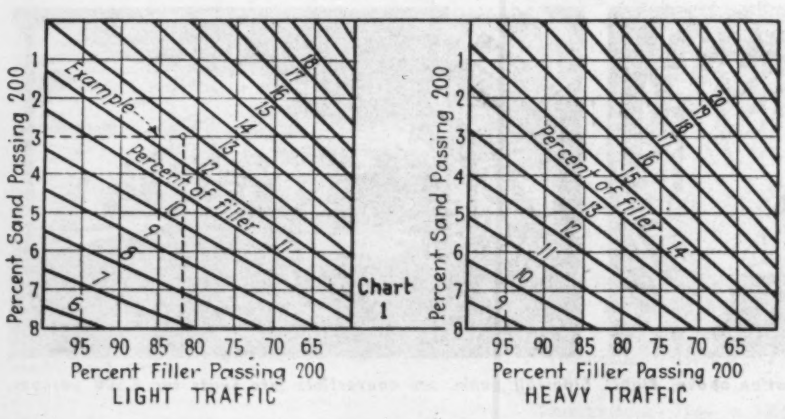


Fig. 1. The theory of the voids method of proportioning asphalt mixtures.

The rest of the volume, 76 percent, is multiplied by the specific gravity of the aggregate, in this case assumed as 2.65, or more than two and one-half times the weight of an equal volume of asphalt cement. The 22 percent representing the voids in the aggregate thus requires 10.11 percent of bitumen by weight when the specific gravities are as shown. Higher or lower specific gravities of the aggregate will change the percent of asphalt cement.

Fineness modulus and voids combined

The simplified method of proportioning mixtures described here combines the fineness modulus and the voids method to take advantage of the convenience and practicality of the one and the accuracy of the other. The fineness modulus scale is sufficiently close to permit the starting of a job or the making up of a trial mixture with the assurance of being at



st close to the right answer. It is n more valuable in the open or ous mixture range where the voids thod does not apply.

Four charts have been worked out eliminate calculation and save time obtaining results under the sug- ted system.

Chart 1. Desired combinations of er and sand are obtained from art 1, which is divided into two rts, one for light traffic and the er for heavy traffic pavements. The rt covers use of filler and sand y for sheet asphalt or, reduced by addition of any amount of coarse regate, for other mixes.

Chart 2. At the bottom of this chart two scales marked A and B. le A is for the use of bank sand filler for the fine aggregate be- the 10 mesh and angular aggre- e for any amount larger than the Scale B is for the same fine ag- gate but with rounded gravel for coarse aggregate. Many river and k gravels contain some broken and gular shaped particles, which uld cause them to fall somewhere ween the A & B scales. Any com- ation of rounded and angular regate will require some degree of rpolation.

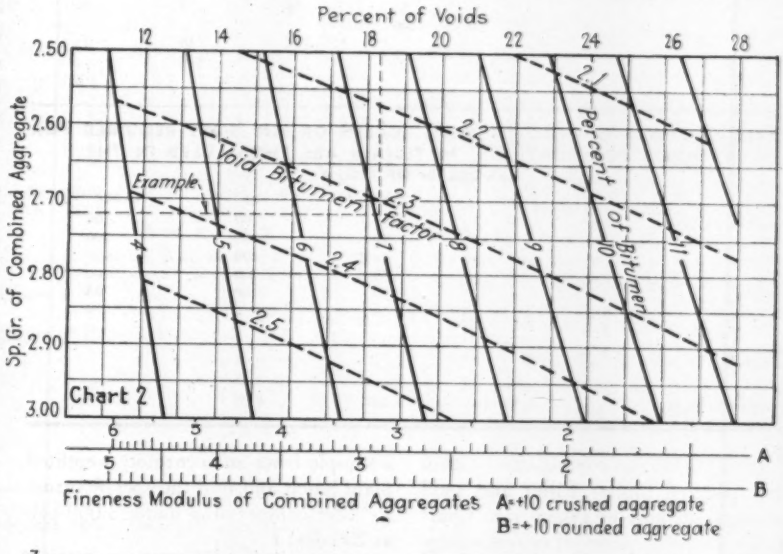
The point of intersection of a ver- l line from a point on the fine- s modulus (F.M. on the chart) e with a horizontal line extending m the specific gravity scale on the will determine the probable ount of bitumen needed. This e point also will be used to find void-bitumen factor as represented the slanting broken lines marked to 2.5.

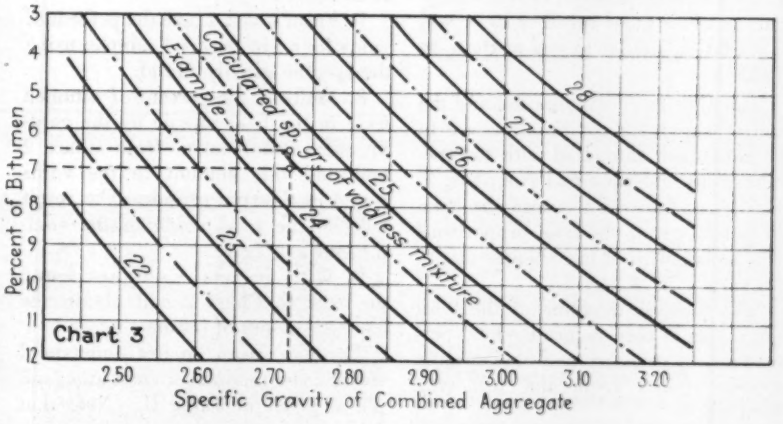
Across the top of the chart is the e representing the percent of voids nd in the compressed aggregate. s scale was raised by 2 percent so, example, where the 18 appears the responding amount of bitumen will the amount needed to fill exactly percent of voids. It is used in tion to the specific gravity scale the same way as the fineness ulus scale along the bottom of the rt.

Chart 3 & 4. These are more or self explanatory and their use is e clear by following through the mple shown on the mix design n, Fig. 4.

The step by step procedure in work- out proportions for asphalt mix- tures, following the design form, is:

1. List the specifications and the description of the aggregates selected.
2. Make screen tests of aggregates; calculate the fineness modulus and find the specific gravity.
3. The aggregates may then be combined by calculation in proportions




Percent of Bitumen
3 4 5 6 7 8 9 10 11 12
Example
Calculated sp. gr. of voidless mixture
22 23 24 25 26 27 28
Chart 3
2.50 2.60 2.70 2.80 2.90 3.00 3.10 3.20
Specific Gravity of Combined Aggregate

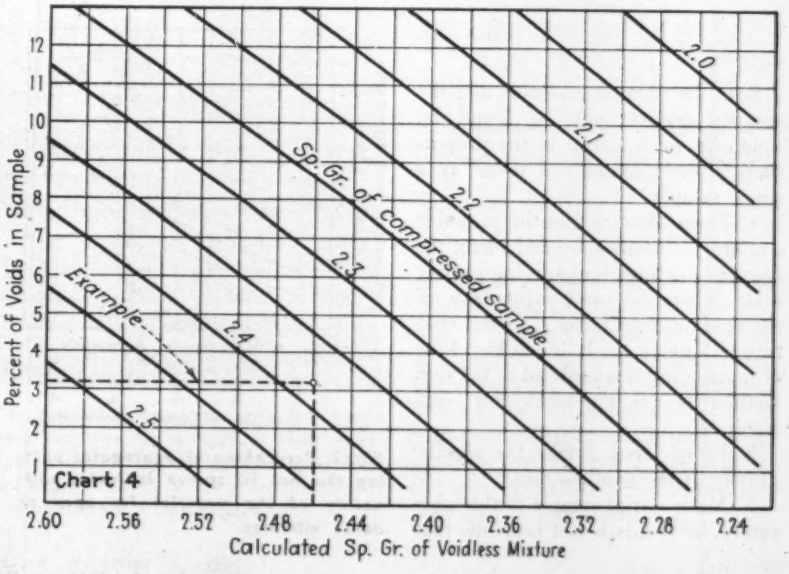

Percent of Voids in Sample
12 11 10 9 8 7 6 5 4 3 2 1
Sp. Gr. of compressed sample
2.0 2.1 2.2 2.3 2.4 2.5
Example
Chart 4
2.60 2.56 2.52 2.48 2.44 2.40 2.36 2.32 2.28 2.24
Calculated Sp. Gr. of Voidless Mixture

TABLE I—TWO OR MORE SIZES OF COARSE AGGREGATE MAY BE FITTED TOGETHER TO OBTAIN A MATERIAL WITHIN LIMITS SPECIFIED.

Passing	3/8	3/4	1	1 1/2	2	2 1/2
4	40	25	16	12	8	5
3/8	100	62	40	30	24	19
3/4		100	75	58	50	42
1			100	...	...	...
1 1/2				100	85	74
2					100	...
2 1/2						100

TABLE II—FINENESS MODULUS WITH SCREEN OF THE SIZES REQUIRED FOR ASPHALT SPECIFICATIONS. MATERIALS ARE THOSE USED IN THE PROBLEM OF FIG. 4.

		Filler	Sand	C. agg. (1)	C. agg. (2)
Retained on Screen	200	18	97	100	100
	80	0	79	100	100
	40		44.7	100	100
	10		2	100	100
	4		0	50	98
	3/8			0	70
	3/4				0
	1 1/2				
	3				
Fineness Modulus		0.18	2.227	4.50	5.68

that will bring the combination within the specified limits. Filler and sand proportions may be taken from Chart 1. Two or more sizes of coarse aggregate may be fitted together to obtain a gradation similar to one of those in Table I.

The filler-sand combination and the coarse aggregate combination are to be combined, compared with the specifications and classified from Fig. 3. (If the mixture falls within the open or porous group the final proportions will be taken from the fineness modulus scale only, Chart 2.)

The fineness modulus of the total aggregate is then determined by percentage calculation and the specific gravity found from the following formula:—

$$\frac{100}{\frac{\%\text{ filler}}{\text{Sp. Gr.}} + \frac{\%\text{ fine Agg.}}{\text{Sp. Gr.}} + \frac{\%\text{ coarse Agg.}}{\text{Sp. Gr.}}}$$

Both the fineness modulus and the specific gravity may be found by weighing out material in the proportions already found and tested as a single sample.

4. From Chart 2 find the probable amount of bitumen needed using the fineness modulus and specific gravity scale. From the same point, take off the void-bitumen factor. (If the mixture falls below the B line in Fig. 3 the proportioning is completed as the void method is not applicable for such material.)

5. From Chart 3 take the specific gravity of the voidless mix.

6. Make a trial sample in the laboratory, or if this is not possible, take a sample from an accurately weighted plant batch and find the specific gravity after compressing under 3,000 psi. at 250 deg. F.

7. From Chart 4 take the percent of voids found in the trial sample, using the specific gravity found.

8. Multiply the percent of bitumen used in the trial sample by the void-bitumen factor taken from Chart 2 and add this amount to the voids found in the trial sample. The result will be the total voids in the compressed aggregate.

9. With the total voids just found go back to Chart 2 and obtain the correct amount of bitumen needed.

For those who do not understand the fineness modulus system an example is given in Table II. (Note that

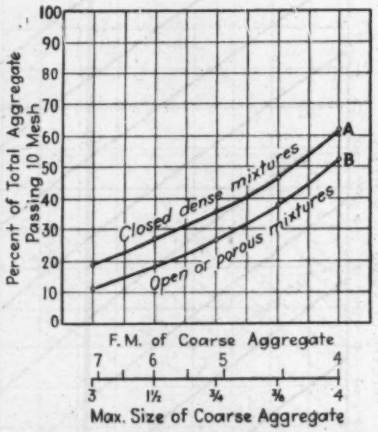


Fig. 2. Percentage of aggregates passing the No. 10 screen indicates suitability of the material for open or dense mixtures.

screen sizes differ from those used for concrete aggregates.) Fineness modulus is a scale by which the average size of a graded aggregate is determined. The same screens must always be used, and in the same numerical order or the result will have no meaning. The fineness modulus number is found by adding the total accumulated amounts retained on each sieve and dividing by 100.

When preparing to make an asphalt pavement or considering any methods or practices that are to be applied to the making of one, it is necessary to have clearly in mind the results desired. All tests, practices, formulas and the like are merely means to an end and not an end in themselves. The following are suggestions for the specification writer.

Stability. It is important that the design of the mixture be made specifically for the class of traffic to be expected. Heavy traffic requires stiff or fairly hard mixtures that will, through constant pounding and kneading, be kept alive and free from checking. Low-penetration asphalt cements and higher percentages of filler will generally accomplish this result. Over rich mixtures must be avoided.

Light traffic streets, receiving less kneading, must be made less hard through the use of higher penetration asphalts and a decreased amount of filler. Richer and more pliable mixtures may be employed without danger and will be quite advantageous in resisting weathering and oxidation.

The Hubbard-Field stability test will provide advance information as to what may be expected from selected materials. The following will be found reasonable limits under the standard stability tests:

1,500 lbs. minimum for light traffic, such as residential streets.

2,000 lbs. minimum for heavy traffic, such as main thoroughfares and busy airport runways.

3,000 lb. minimum for special pavements subjected to abrasion, heavy twisting wheels and narrow concentrated loads.

A safety factor of 500 lbs. may be added to each minimum requirement of the design mixture to cover normal plant and job variations.

ASPHALT MIXTURE DESIGN

Class of traffic *Light*

Governing Specifications

	% bit.	200	80	40	10	4	½	¾	Density	Stability
	6	4	10	20	40	55	75	100	95	2000
	9	10	25	40	60	75	100		98	

Description of Aggregates

F. Agg. *Bank Sand* C. Agg. *Crushed Dolomite*

Analyses of Aggregates—Percent Passing Screens

	200	80	40	10	4	½	¾	F. M.	Sp. Gr.	% Comb.
	25	100						0.18	2.70	6.3
Agg.	3	21	55.3	98	100			2.22	2.60	43.7
Agg.					50	100		4.50	2.84	25.0
Agg.					2	50	100	5.68	2.84	25.0
bined	6.5	15.5	30.5	49.1	63.0	82.5	100	3.53	2.72	

From Chart 1

% Filler A = 12.7
% F. Agg. B = 87.3

From Chart 2

C = % Bit. F. M. scale C = 6.5
D = Bitumen Void factor D = 2.34

From Chart 3

Sp. Gr. of voidless mixture E = 2.46

From Chart 3

Sp. Gr. of trial sample F = 2.38
% of voids in trial sample G = 3.1

% voids filled by bitumen C × D H = 15.21
Total voids in aggregate H + G J = 18.3
Corrected % of bitumen from Chart 2 K = 7.0

Batch Weights

C. = 70
r = 53.6
Agg. = 404.4
Agg. = 239.5
l = 232.5
1000.0

Stability of job mix = 2,700
Sp. gr. of job mix = 2.44
(Free from Voids — Chart 3)

Remarks.....

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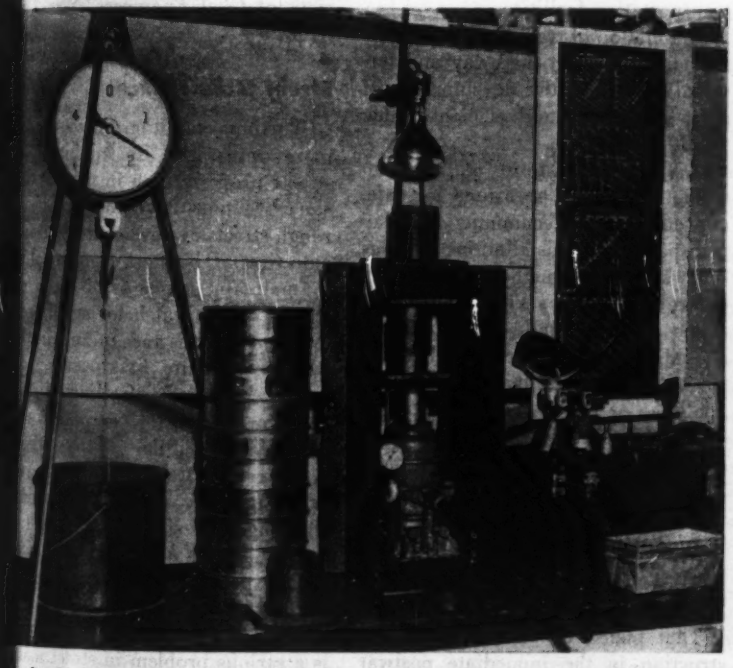
3. Form used by author's laboratory in designing asphalt mixtures from the rts and simplified scheme described.



4. Simplified scheme for asphalt proportioning requires only the easily ed equipment shown. The infra-red bulb provides any amount of heat neces- for testing, depending on the distance it is held from the specimen; at 7 in. ives a constant heat of 250 deg. F. The hydraulic jack in the steel frame pro- s up to 20 tons pressure. Total cost of equipment is about $200.

Durability. A reasonable expectancy of use for asphalt properly placed and maintained is 25 to 40 years. The aggregates must be sound and of a type to which the asphalt cement will adhere indefinitely. Within the stability limits given, the largest possible amount of asphalt cement should be used in the mix. Density tests will accurately determine what this amount should be.

Uniformity. Only a relatively small variation in the quantity, quality or other physical characteristics of the materials should be permitted. Specifications should clearly state what the permissible variations are. A fineness modulus limit of plus or minus 0.2 is a good guide for the plant man.

Larger and more accurate copies of the charts may be obtained by writing the author, Newark Testing Laboratories, 80 Lafayette St., Newark 5, N. J.

California City Plans Free Parking Areas

Burlingame, Calif., is planning publicly owned and operated parking areas in the city's congested areas to remedy present problems of heavy traffic flow, relatively narrow streets and limited parking space. The city engineer's office, aided by a parking area and alleyway committee of the local Chamber of Commerce, has developed proposals and plans for these improvements.

The result of extensive studies is a plan to provide easy, free flow of traffic on important business streets with readily accessible parking areas within reasonable walking distance from the main business area. The project will be financed by creating an assessment district within the commercial zone, the cost of improvements to be borne by property owners within the district.

Detailed studies were made to determine the value of land and improvements to be acquired to provide free off-street parking areas and property to be acquired for entrance and exit purposes; benefits to land within the assessment district; benefits and damages to real estate owners in an assessment district established in the business district, and benefits to the city as a whole in relation to the business district assessment.

Notes on the Public Works Congress

• Although postwar planning of airports, highways and waterways received considerable attention at the fiftieth annual congress of the American Public Works Association held at St. Paul, Minn., on September 24-27, exceptional interest was centered on municipal problems. These include urban and city highway planning and city street maintenance, street cleaning and refuse collection and disposal. Abstracts of papers presented at the technical sessions are given in the following. A news account of the convention together with the names of the newly elected officials of the association appeared in ENR, Oct. 5, vol. p. 393.

Future Urban Traffic

FUTURE HIGHWAY PLANS for cities should, in most cases, include provisions for radial arteries converging upon the central business district, with some type of distribution loop at or near the edges of that district, with some type of distribution loop at or near the edges of that district and with by-pass or cross-town routes where analysis shows them to be justified. Plans must also include parking and other terminal facilities, all of which should be properly related to other transportation systems.

Any plan so developed should be an integral part of a city-wide plan, or preferably of a metropolitan or regional plan. The new pattern for city and urban highway improvement should be so designed as to attract "through" traffic away from residential districts, and should utilize low-cost property such as that in blighted areas.

Future arterial systems must eliminate or greatly reduce the number of grade intersections. The complete answer, and the most favored type of design where traffic conditions warrant the acquiring of extensive right-of-way and the cost involved, is the freeway with limited access, divided highways and no grade intersections.

Urban traffic planning is an important responsibility of city administrators, since our major traffic bottlenecks, or inefficiencies in highway transportation, are in urban areas. Four fundamental functions comprise the scope of present and future planning for city and urban traffic needs. They include:

1. The collection and analysis of factual data on traffic surveys such as origin and destination of vehicle traffic, volume, speeds, accidents, traffic congestion, parking and other terminal demands.

2. The preparation and interpretation of traffic plans, based on the analysis of comprehensive data necessary for the proper location, function, design and operation of highway transportation facilities.

3. Relation of traffic needs and performance to street, highway and terminal design in the development of safe, convenient and efficient traffic facilities.

4. The application of uniform traffic operational measures for safe, convenient and economic highway transportation. Installations such as one-way and through streets, signal control systems, parking regulations, traffic routing and speed control should not be arbitrarily applied until after engineering studies and analysis of traffic demands have shown the need for such measures.—*Burton W. Marsh, director, Traffic Engineering and Safety Department, American Automobile Association, Washington, D. C.*

Inadequate Postwar Plans

That plans for public works construction in the immediate postwar era are totally inadequate in amount is evidenced in a report of the Committee on Postwar Construction of the American Society of Civil Engineers.

Monthly statistics gathered by th Business News Department of *Engineering News-Record* and released the Committee reveal that only $2 billion worth of public works pla had been started up to last Apr 1. Since then an additional $1.6 bi lion has reached the design stag making a total of $3.7 billion.

A breakdown of today's volume public works planning in the desig stage is as follows:

Waterworks	$258,269,000
Sewerage	456,079,000
Streets and roads	902,811,000
Bridges	364,894,000
Buildings	676,890,000
Earthwork	622,680,000
Unclassified	435,115,000
Total	$3,716,748,000

Four states—New York, Ohi Michigan and Texas—furnish ov half the total postwar public wor plans reported in the United States.— *Mark B. Owen, director, Research a Development Division, American S ciety of Civil Engineers, New Yor N. Y.*

Street Maintenance

Wartime conditions have made more imperative to maintain o streets properly than in normal tim since we now have the problem rough streets or pavements destroyi auto tires. The most economical w to maintain streets is to keep co stantly on the watch for small brea or chuck holes and to repair th when the failure first occurs. Th means continued patrolling of stre and not waiting for complaints to filed by the public. Many cities not try to patch chuck holes wi asphalt in the cold winter mont claiming that such patches will n stand. This is not true. Satisfact asphalt patches can be made any ti of the year.

Methods of backfilling excavati is a serious problem in street main nance work. Some cities require use of power tampers requiring backfill to tbe tamped fairly dry. Th method is considered good, but in a

se, about 4 in. of crushed rock hould be placed on top, using plenty f stone dust, and treated with cal- ium chloride. Some cities permit the xcavation to be backfilled by uddling, while others allow one half f the depth of the backfill to be uddled, with the remainder being and tamped or power tamped, using y materials. Still other cities re- uire all backfilling to be done with and, hauling away all excavated aterial.

In repairing concrete base pave- ent the most successful method is to ut out the pavement 6 in. wider on ll sides than the excavation, using e ledge as a bearing for the new oncrete patch. Reinforcing rods also re used to strengthen the slab.

Maintenance of macadam or gravel treets has been done successfully in everal cities by applying a light ap- lication of cutback asphalt to allay e dust. This is only temporary, owever, and it should be followed the ext season by scarifying the street a depth 3 or 4 in. and then blading e following year.

Another acceptable method of aintaining macadam or gravel treets involves the application of a rimer coat ½ gal. of MC-1 per sq.. d., following this with 0.3 gal. of C-3 or MC-5, or even RC-5 asphalt r sq. yard. About 30 lb. of pea ravel or stone chips should be ap- lied per sq. yd. and thoroughly lled in to get embedment. This will ve a more lasting surface, and the st is actually less than the plain dust ying method, maintenance cost be- g taken into consideration.

A very successful method of re- iring badly cracked concrete pave- ent includes the cleaning of the vement, the filling of large cracks th an asphalt filler and letting it re a few days, following which a l coat is placed over the entire rface of the paving, in the following oportions:

Apply 0.1 to 0.2 gal. of MC-1 cut- ck for a primer, applied either with distributor or by using ordinary phalt kettles with a hand spray. ter the prime coat has set for 24 , apply a seal coat of 0.3 gal. of C-1, MC-5 or RC-5 cutback asphalt tar product, with pea gravel or ips applied with an aggregate reader at the rate of 30 lb. per sq. . This aggregate must be thor- ghly broomed and rolled for two or three days. An efficient piece of equipment for rolling and brooming is a tractor pushing a large drag broom in front, and pulling a roller behind.

Maintenance of an asphalt pavement, whether it be asphaltic concrete, sheet asphalt, bithulithic or other commercial types, providing it has not lost it contour and does not have too many depressions, is done best by the seal coat treatment, similar to that for concrete pavement, except that a prime coat is not needed.

Depressions and chuck holes, of course, will have to be filled with an asphaltic binder, placed after a prime coat has been applied to the spots. Every asphalt paved street should be seal coated the year after it has been laid. Many engineers now call for this in their specifications.—*Ralph C. Graham, superintendent, Dept. of Construction and Public Works, Davenport, Iowa.*

Frequency of Street Cleaning

In analyzing the required frequency of cleaning streets and alleys, the Street Cleaning Committee of the Association recommends the following practice for cities over 100,000 population: Business streets should be catalogued in three groups, (1) downtown streets and other important business streets in heavily populated areas; (2) outlying business areas in moderately populated districts, shopping centers and the like; and (3) industrial areas. These three types of streets should be cleaned two to six times daily, once a day and three times a week, respectively.

Residential streets, classified in three groups including dirty, typical and unusually clean streets, should be cleaned daily, weekly and monthly, respectively. The committee also recommends that alleys, classified in three groups the same as residential streets, should be cleaned three times a week, twice a month and once a month, respectively.—*Wm. A. Xanten, superintendent, City Refuse Division, Washington, D. C.*

Refuse Collection and Disposal

Conditions imposed by the war continue to present serious problems to the operation of refuse collection and removal systems, chiefly as to the availability of satisfactory labor and equipment. A huge unfilled demand still exists for refuse collection vehicles with enclosed bodies having installed equipment for compressing refuse.

An overall picture of labor conditions is presented from questionnaires submitted to 350 representative cities, by the Association's committee on refuse collection and disposal. Of the 165 cities reporting to date, city employees are under civil service in 72 and are unionized in 66. Labor was found less competent than heretofore in 138 of the cities and less cooperative in 128. In only 12 of the 165 cities was the municipal organization supplemented by contracting part of the work.

Measures adopted to improve labor conditions, since beginning of the war, were reported by the following number of cities:

Increased wages	153
Sick leave granted with pay	88
Vacation with pay	91
Change from daily to monthly pay rate	28
Smaller tasks or shorter route for day's work	23
Shortening working hours	16
Overtime pay for more than regular task	92

Regarding wage increases, less than 10 percent of these cities added $5.00 per month to driver's wages; 66 percent increased wages from $15 to $25 per month and two cities increased driver's wages $50 per month.

Labor turnover was appreciable in many instances. Five percent of the 165 cities reported less than 10 percent turnover, 75 percent had a turnover of 10 to 60 percent, and 45 percent showed a turnover exceeding 50 percent.—*Carl Schneider, consulting engineer, New Orleans, La.*

Street Layout and Design

Traffic surveys made prior to the war indicate that only 10 to 15 percent of all vehicles in congested city areas were actually moving. The remaining 85 to 90 percent were loading or discharging cargo or were parked at the curb or off the street. Some of the moving vehicles, in one case as high as 30 percent, were in cruising storage, looking for a place to park. Solution of this inactive parking problem would free the streets for the 10 to 15 percent moving vehicles thereby reducing the need for some street widening and other improvements.

What we now have is all streets

about identical in width, straightness and number of intersections per mile, and almost none that serve either through traffic or land-service satisfactorily. Moreover, too much land is used for streets but not enough land in the right-of-way for major streets. The practical solution is to improve a selected few major streets, so they will carry more traffic per lane of pavement, and adopt designs that will discourage heavy traffic from using streets that should serve only for land-access purposes.—*Thomas E. Collins, city engineer, Elizabeth, N. J.*

Airports are Needed

Increasing airport facilities has four primary objectives, namely: (1) to make possible a healthy and rapid growth of air transportation and private flying, (2) to implement national defense by encouraging large numbers of private airplane owners to learn the rudiments of flying, (3) to furnish a means of added recreation to thousands of citizens who will fly for the pleasure of it, or who will use this rapid means of transportation in connection with vacation or pleasure trips, and (4) to substantially increase postwar employment, required in the construction and servicing of airplanes and landing facilities.

Although airports and landing facilities are of prime interest to the individual community, the two controlling powers are the Federal congress and the state legislatures. All existing state laws dealing with airports should be examined now. At least they should undergo close scrutiny well in advance of legislative sessions to be held next year by 44 states.

A need exists for the creation of legislative authority to enable municipalities to use the power of the right of eminent domain or condemnation to obtain property for airports. The supreme courts of 14 states have held this procedure is legal.

Other questions which should be settled as soon as possible include: Can cities rent or lease municipal property for private use? What public agency should fix the service charges for airports? Who will pay and control the air traffic policeman of the near future? Other questions as yet unanswered deal with the air space rights of land owners and of airport owners and operators.—*Jack Frost, assistant manager, National Aeronautics Association, Washington, D. C.*

Recommendations of the Association's airport committee for the postwar development and construction of airports and landing facilities cover a wide field, among which is the requirement that airports or air terminals should be located as near as possible to the central population or business district of a city. Also, in larger cities, low cost property should be acquired now for future auxiliary airport sites.

Regulations for spacing of airports should be adopted by the state and federal governments, and municipalities and metropolitan districts should establish a key plan giving permanent or tentative locations for major, secondary and minor airports within the area. Runway lengths at sea level for feeder type planes should be from 3,500 to 4,500 ft. For long range domestic operations, they should be from 5,000 to 6,000 ft. A few airports for trans-oceanic operation will require runways up to 10,000 ft.

In order to reduce paving costs careful study should be given to the planning of airports with one major runway in the most useful direction with respect to wind. The CAA Class I airport or airpark can be developed at a relatively low cost for private flying and also to serve as community recreational centers. Blighted areas near business districts can be cleared in strips and used for this purpose.

Landing strips adjacent to public highways should be constructed to serve small communities where a regular airport could not be justified. Such landing strips should be constructed and maintained by the various states. The acceptance of federal or state aid for airport construction should not necessitate the relinquishment of control by the municipality over airport operation. Present sources of airport revenue should not be diverted.—*George M. Shepard, chief engineer, Department of Public Works, St. Paul, Minn.*

Brick Pavements

There have been no prolific research or development programs regarding the use of brick pavement during the war period. Much brick paving has been used but little new information has been acquired, although a number of interesting developments have been suggested.

The use of slag or cement sand beds under bituminous-filled brick surfaces should be absolutely prohibited as a surprisingly large number of failures have resulted from this strange combination.

Advocates of asphalt versus coal tar oil seem to be winning the argument for use in mastic beds. Mastic fillers still offer hope that they may be the answer to some of our filler troubles but the problems of application are many.—*Roy L. Phillips, city engineer, Meadville, Pa.*

Contractors Estimate Postwar Construction

Contractors have on hand construction equipment and machinery valued at approximately $2,000,000,000, and they are prepared to handle new construction at an annual rate of from $11,000,000,000 to $12,000,000,000 within one year after the end of the war, the Associated General Contractors of America, report.

"Total valuation of privately-owned construction machinery is estimated by persons in the industry at $1,300,000,000" the AGC states, "and an independent estimate made by the Bureau of Labor Statistics gives the same figure. To this should be added at least $400,000,000 for trucks and $250,000,000 for miscellaneous equipment, making a total inventory of $1,950,000,000 for all construction equipment."

A recent report by the Bureau of Labor Statistics, sets productive capacty for all types of construction materials, except plumbing and lumber, as being sufficient for a construction rate of $15,000,000,000 per year, according to the AGC. In the lumber industry, sawmill capacity is sufficient, but logging equipment has deteriorated. Capacity for plumbing fixtures is adequate for a construction program of $12,000,000,000 per year, with a likelihood of expansion before this rate is reached.

The construction industry, it is said, can put from 7,000,000 to 10,000,000 people to work on construction projects on and off the site without any time-consuming retooling and reconversion of plants and equipment.

ENGINEERING ABROAD AS SEEN BY ENR EDITORS

Japanese Concrete Construction In the Gilbert and Marshall Islands

N. A. Bowers
Pacific Coast Editor, Engineering News-Record

EXAMINATION OF JAPANESE CONCRETE structures in the Gilbert and Marshall Islands afforded opportunity to study the effect on concrete of heavy shocks such as are caused by aerial bombs and shells from large caliber naval guns. No data are available, of course, on materials and mixes used by the Nips but sea water was doubtless used for mixing, and it is apparent that the aggregate is coral, quite likely pit-run fines.

A characteristic of concrete made with such material, and this comment applies to our own concrete as well as that made by the Nips, is its very light weight. This is likely caused by the absence of sand such as is ordinarily used in good concrete. There is no heavy sand on coral atolls and the very small particles of coral are usually of light weight. Estimates on weight and strength of some of this coral atoll concrete, as made by our own forces, are about 125 lb. per cu.ft. and 1,500 lb. in 28 days.

Jap methods proved defective

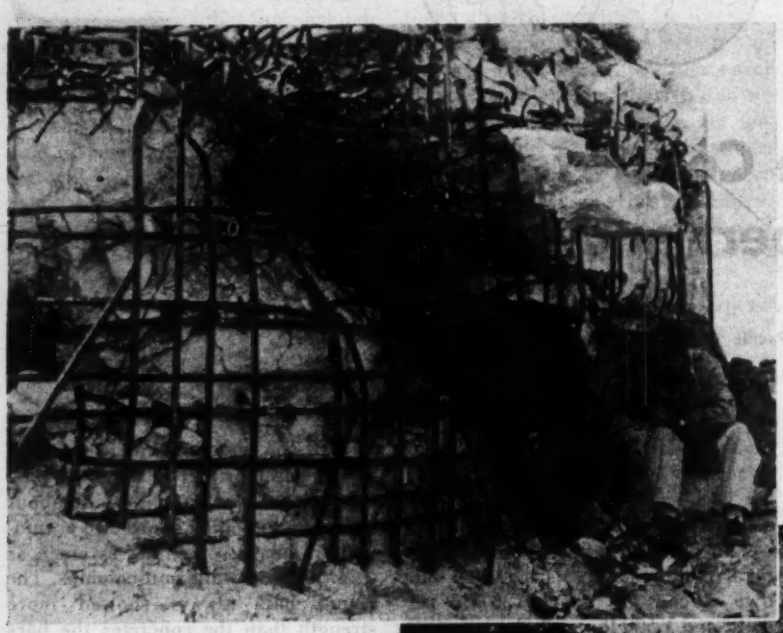
The Nips used only smooth, round bars for reinforcing. No square or deformed bars were found among the enormous quantities of reinforcing rods captured from the Japs. They often used what seemed to be excessive amounts of reinforcing steel and they usually plastered the outer surface of the concrete with ¼ to ½ in. of cement mortar. Apparently they were concerned not at all about laitance which they allowed to accumulate in layers sometimes as much as 2 in. thick in walls and columns. The round bars always showed more strength than the concrete; the bars tore away from the concrete cleanly and showed no breaks or constriction.

There may be some difference of opinion as to whether the destructive effect of the bombardment was more complete than would have been the case if the concrete had been of high grade. There can be no question, however, as to the effective destruction our forces accomplished.

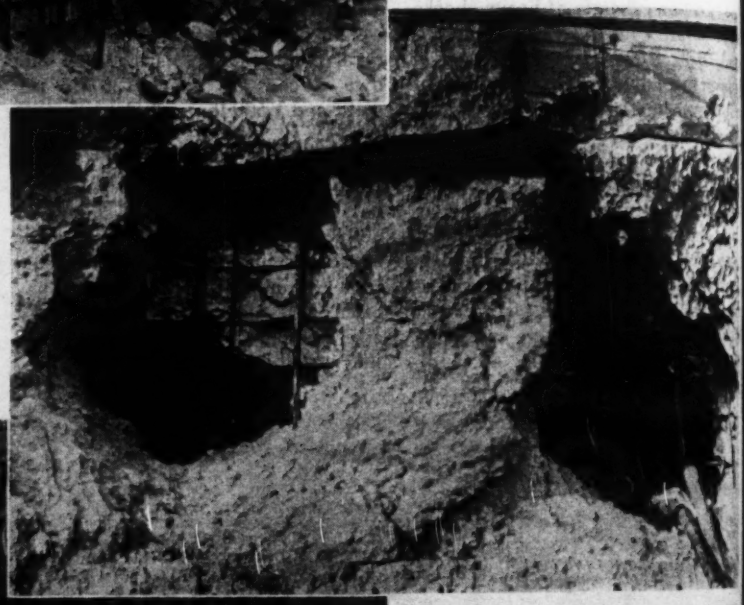
Double walls, each a meter thick and with a space of about 2 meters between, were used in this two-story command post on Tarawa. Cables and sand bags were put in by our troops, of course, after capture. Right: Heavy bombardment of this massive concrete mounting for an 8-in. rifle shifted portions of the structure with some effect as an earthquake.

Observations of these structures confirm the reports from Britain that under the shock of bombs and shells, steel reinforcing often separates from the concrete in a remarkably complete manner. This effect was clearly to be seen in many of the Jap structures. Buildings on which bombardment was concentrated were sometimes reduced to wreckage that was little more than a twisted tangle of steel reinforcing atop a pile of rubble.

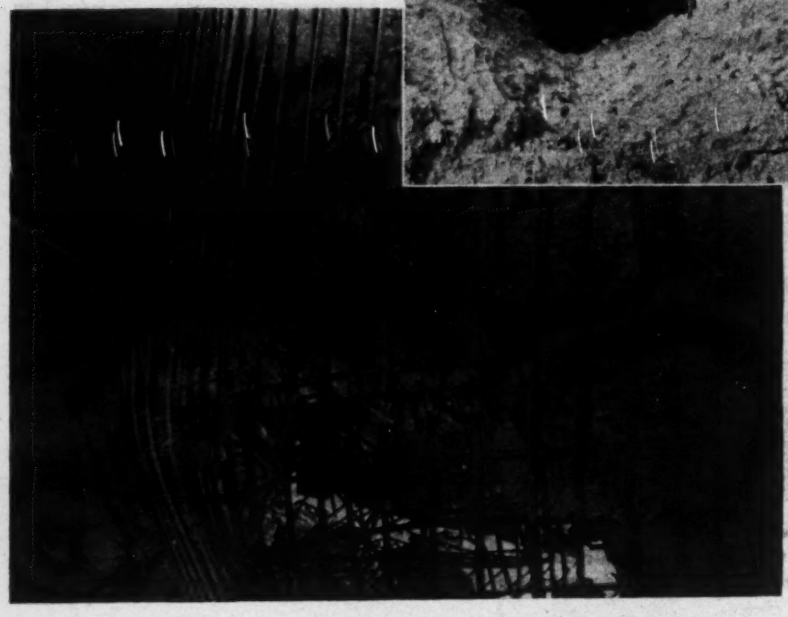
On Kwajalein, where there seemed to be better aggregate than on Tarawa, the Japanese used precast concrete blocks for pier construction. Both concerte and workmanship on the piers was comparatively good.



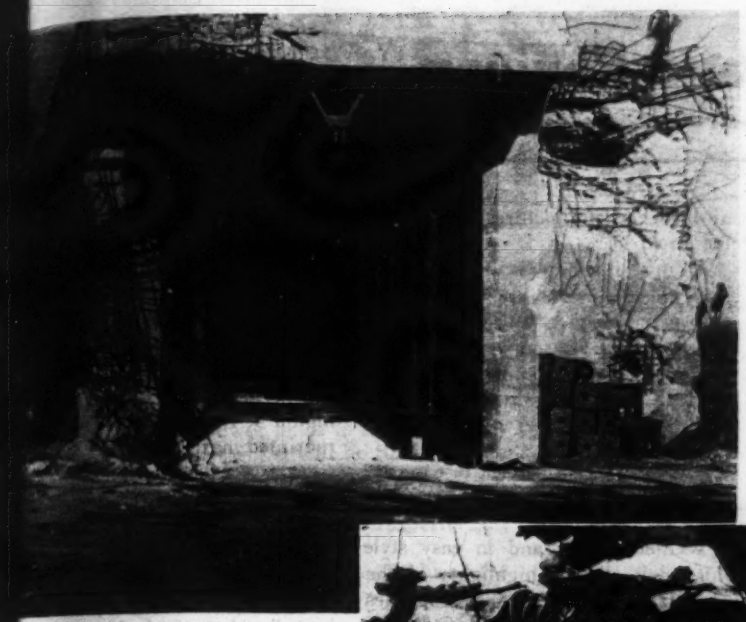
A typical pill box wreck (left) after heavy shelling. Only rubble and rods remain in some instances.



Massive concrete walls (right) often separated along planes of weakness formed at the joints. Note the obvious lack of coarse aggregate in the mix.



This interior view of a wall in the Kwajalein Namur command post (left) shows how the inner curtain of reinforcing steel was pulled inward, like a blister, freeing itself from the concrete under the impact of a projectile coming through from the outside.



This Japanese bomb warehouse on Roi-Namur Island (left) has meter-thick walls and two pairs of heavy steel doors. The monorail is for bringing bombs out to trucks.

...lumn and beam construction (right) ... an upper floor of the Roi-Namur ...manded post.

...s command post on Roi-Namur ...elow) had terrazzo stairways and ...rquet floors. Open wall panels at ...ght originally were closed in with ...oden framed windows and screens.

This column had a thick laitance layer at a height of four sand bags above floor level. Such layers, of course, were hidden by the surface plaster.

Book Notes and Reviews

The month's addition to the engineer's reading and reference list

Stories About the Seabees

CAN DO! THE STORY OF THE SEABEES—Lieut. (jg) William Bradford Huie, CEC, USNR, with an introduction by Vice Adm. Ben Moreell, CEC, USN. 250 pp. Published by E. P. Dutton & Co. New York. $2.75.

The most comprehensive picture of the Seabees yet given to the public is presented in this vivid, salty account of the origin, performance and spirit of naval construction battalions. The authoritative nature of the book is indicated by the commendatory introduction written by the Seabee commander-in-chief. The book itself could have been written only by a Seabee. None other could have had the viewpoint, the familarity with places and conditions and the enthusiasm for his subject which the author displays.

In addition to having all the value of an accurate historical record, this work has been made highly entertaining by the recounting of many actual incidents that illustrate the spirit, determination and humor of typical members of the organization. The list of individual Seabees that have received military decorations as well as the alphabetical list of casualties and "missing in action" are valuable records. The index of references to individuals and to places helps to make this a book the reader will keep for reference.

Skill in making the subject attractive is shown by the brief but pointed tribute to the construction industry in Chapter 1. The reader then is told the gripping story of "men and mud at Munda" followed by the equally engrossing account of what happened at Guadalcanal. Only after the reader's interest has thus been built up does the author outline the conditions that brought the Seabees into being. The chapters devoted to Seabees history are as entertaining as they are informative.

It is unfortunate that the makeup segregates all illustrations in the back of the book. A narrative so vivid and a work of such value for historical reference should have had the dignity in format attending distribution of the excellent pictures throughout the book.

All in all, the book is well done; the three Seabee poems are well selected and in the chapter on Seabee humor and ingenuity are some gems that the reader will long remember and doubtless will retell in his own words.

WE BUILD, WE FIGHT—Hugh B. Cave. 122 pp. Published by Harper & Bros., New York. $2.50.

Written simply and in easy style this book records highlights of the organization of the Seabees, outlines the methods and program in the training courses given at Camp Peary, Va., and Davisville, R. I., and then follows with chapters recounting incidents in the history of Seabee activities in the South Pacific, the Aleutians, Iceland, Bermuda, Africa and the Mediterranean.

In each of these chapters introductory material gives dates for historical record purposes and frequently identifies battalion and officers. The subject matter consists largely of these incidents, presumably selected because of their typical nature, and is put together, where possible, in the sequence of the action taking place. An attractive feature is the generous use of full-page pictures.—N.A.B.

Miscellaneous Notes on Booklets and Reprints

GROUND-WATER SUPPLIES of Middlesex County, N. J., are discussed in Special Report 8 issued by the New Jersey State Water Policy Commission in cooperation with the U. S. Geological Survey. Limited free distribution by the commission, 28 West State St., Trenton, N. J.

PAMPHLETS descriptive of Latin American republics have been prepared by the Office of Inter-American Affairs and can be obtained from the Superintendent of Documents, Washington, D. C. These pamphlets are designed to aid those planning to do business with the countries concerned. Those issued to date relate to Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guatemala, Mexico, Uruguay and Venezuela. They cover the history, geography, population, resources, communications and economic and social organizations.

A LIMITED EDITION of a booklet "Control of Quality of Ready-Mixed Concrete" is being distributed by the National Ready Mixed Concrete Association, Munsey Building, Washington 4, D. C. The booklet is to be reprinted next year with such revisions as are developed by current discussion of the subject.

FROM TIME TO TIME the editors of *Engineering News-Record* are advised of the availability of sets of bound volumes of this publication and its predecessors. Such a set dating back to 1906 is now available. Inquiries concerning it should be addressed to the editor.

New Engineering Books

HIGHWAY RESEARCH BOARD—Proceedings of 23rd Annual Meeting, 1943. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $3.50; $3 to highway department engineers.

ELEMENTARY STATISTICS AND APPLICATIONS—By James G. Smith and Acheson J. Duncan. 720 pp. McGraw-Hill Book Co., New York 18, and London. $4.

BULLDOZERS COME FIRST—By Waldo G. Bowman, Nathan A. Bowers, Archie N. Carter, Edward J. Cleary and Harold W. Richardson. 278 pp. McGraw-Hill Book Co., New York 18, and London. $2.75.

HISTORICAL GEOLOGY—By Russell C. Hussey. 491 pp. McGraw-Hill Book Co., New York 18, and London. $3.50.

SAMPLING INSPECTION TABLES—By Harold F. Dodge and Harry G. Romig. 106 pp. John Wiley & Sons, New York, Chapman Hall, London. $1.50.

THE TECHNIQUE OF THE TERRAIN—By H. A. Musham. 228 pp. Reinhold Publishing Corp., New York 18, $3.85.

ENGLISH-SPANISH TECHNICAL DICTIONARY—By Lewis L. Sells. 1,500 pp. McGraw-Hill Book Co., New York 18, $30.

BLUEPRINT READING FOR THE BUILDING TRADES—By Joseph E. Kenney. 96 pp. McGraw-Hill Book Co., New York. $2.

HANDBOOK OF TABULAR PRESENTATION—By Ray Ovid Hall. 112 pp. The Ronald Press Co., New York. $3.50.

(*Continued on page* 123)

RUSSIA

Threat . . . or Promise?

WHEN this war is ended, two nations—the United States and Russia—will possess the bulk of the world's military and industrial might.

ether this new situation will hold seeds of catas- or of unprecedented opportunity will be deter- by policies . . . still to be formulated.

his concentration of power leads to a bitter strug- r supremacy, then the world will be turned into a munitions factory.

it is used cooperatively to maintain order, then, I ve, the stage is set for a long era of prosperity . . . peace.

s time that Americans, whether of the Right or the face this basic issue squarely and open-mindedly.

☆ ☆ ☆

group in this country has a greater stake than business and industry in seeing that a satisfactory ian-American understanding is reached.

ithout such an understanding there can be no rea- ble hope for more than a temporary and insignifi- reduction of our crushing wartime tax burden. If hreat of a clash between these two giants impends, er bankers nor governments will run the risk of ng on a scale adequate to maintain international at levels necessary for our future prosperity. ntial international customers, instead of buying in open world markets, will be forced—as during dangerous period introduced by Hitler in the early s—into the trading camp of whichever power they most.

however, Moscow and Washington will agree on erative plans for maintaining the peace, American ess will enjoy enormous new trade opportunities the war.

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ssia, during the three and one-half years since it attacked by Hitler, has conclusively proved to a ting world that it is a top-flight military power.

viet railroads did not break down under the strain ar.

gions accounting for nearly 70 per cent of Stalin's industries were engulfed by the invading Nazis, but e they fell, Soviet management engineers per- ed a near miracle by transplanting entire industries usand miles to the Urals with the loss of as little ur months' production in many cases.

ough American planes, trucks, and medical sup- have been welcomed by Moscow, fairness demands dmission that more than 98 per cent of American uction has *not* gone to the Russian front.

ssian planning and *Russian* equipment won the vic- s of Leningrad, Stalingrad, and the Caucasus.

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t these measures of Soviet military strength— tive as they are of an unsuspected economic de- ment—fail to picture in adequate detail the star- potential of the Russian market after the war.

ssia, for instance, has two and one-half times the of the United States.

It has a population of nearly 200,000,000, and this is increasing at the rate of 2,500,000 a year.

And statistics just released show that Russia has three times as many youngsters under 16 as has the United States. This is a measure both of war potential and of a vast commercial market.

And remember that in no part of the world before the war was per capita production rising as rapidly as in the Soviet Union.

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German armies occupied a region in Russia roughly equivalent to the territory in the United States north of Richmond, Virginia, and east of the Mississippi.

This huge area—with its counterparts of Pittsburgh, Buffalo, and Bridgeport; of Illinois corn fields, New York dairy farms, and Maine potato harvests—was *twice* subjected to the most withering destruction; first by the Russians themselves when they retreated before the Germans, and then by the Germans when they withdrew before the victorious Russians.

As a result, 30,000,000 people are in urgent need of complete reoutfitting. They need houses and shoe laces, trolley cars and baby carriages, tractors and livestock, hydroelectric plants and electric light bulbs.

Many of these needs will be met at home. It is doubtful, for instance, if Moscow will import cooking utensils or sewing machines, for many of Russia's huge war factories can quickly be converted to peacetime production of such consumer goods.

But for the rebuilding and expansion of her industries Russia looks to the United States for equipment.

Soviet representatives already are in this country with authority to negotiate for technical men and the equipment necessary to rebuild the great Donbas coal mines according to the most modern American methods.

It is important to remember that Russia's whole iron and steel industry, its non-ferrous mining and processing, some of its chemical production, much of its coke roasting and gas recovery, practically its entire automobile and tractor industry, and the largest of its hydroelectric plants, are based on American machinery and processes.

It is known among manufacturers that Russia recently has asked for bids on shipbuilding equipment, construction and roadbuilding machinery, alloy steels, textile machines, plastics, and a long list of rail, air, and water transport supplies.

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The Soviet Union, however, has more than a rehabilitation job on its drawing boards.

The first Five-Year Plan, which, as we all remember, was completed ahead of time in 1932, was devoted almost exclusively to heavy industry. Russia set out to build for itself the machines and the factories which, in later years, could turn out, at home, modern equipment for a vast range of light industries.

Stalin, when he inaugurated the second of his famous Five-Year Plans, promised that before it was completed Soviet factories would begin to turn out a flow of con-

sumer goods—ready-made dresses, canned foods, soap, cosmetics, shoes, kitchenware, automobiles, telephones, and modern houses.

But, by 1935, Moscow realized that Russia could not afford to enjoy such luxuries in the face of growing political tension in Europe. So, when the third Five-Year Plan was launched, there was no fanfare. Russians continued to wear their old clothes, to eat whatever simple food was available, and began grimly to build the industries which ultimately produced enough tanks, planes, and guns to turn the tide of battle at Stalingrad.

It is characteristic of Moscow that even before the last battles with the Nazis are over, Russia is planning to pick up its Five-Year Plans where the war had interrupted them.

Invitations to participate in a permanent exhibition in Moscow already have been mailed to American manufacturers. Soviet officials want their public to see samples of our new machine tools, aluminum and alloy products, oil-drilling machinery, bulldozers, and prefabricated kitchen equipment. Russia already is projecting specific plans to resume the job (1) of making the country an industrial giant comparable to the United States, and (2) of making life more pleasant for a long-suffering people.

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What is the measure of this postwar market in the Soviet Union?

Some estimates place the total quantity of goods which Russia might take from the United States during the first two or three years after the war as high as $5,000,000,000 a year. Then, as Russian industry is restored, imports from the United States might taper off perhaps to $2,000,000,000 a year.

Actually, these estimates are far too optimistic, unless the United States is prepared (1) to help Russia pay by buying vast quantities of Soviet raw materials, and (2) to provide large credits to handle the purchases during the first few years of rehabilitation.

The relations of American exporters with Russia during the period covered by the three Five-Year Plans have been eminently satisfactory. Moscow has met all of its obligations punctually; fifteen years of experience have reduced contract forms to the point where they cause a minimum of misunderstanding between the Russian representatives and the American producers; individual American companies with extensive prewar experience in handling Soviet business already are offering large credits on initial postwar orders though these may yet be replaced by large government credits at lower interest rates.

But the volume of trade with Russia after the war hinges upon Moscow's ability to pay. Never before the war did the United States buy more than $30,000,000 of goods a year from Russia. As late as 1938, Soviet exports to this country amounted to as little as $23,500,000, far less than enough to pay even the service charges on the credits which would have to be extended in connection with exports of several billion dollars a year. Only South Africa produces more new gold each year than the Soviet Union. But the United States does not want gold; more of it would only complicate the problem of controlling prices here.

If the United States, however, is to achieve, after the war, the high level of national income which is necessary (1) to keep our expanded factories in operation, and (2) to service the national debt, it might absorb from $90,000,000 to $100,000,000 a year of the kind of goods bought from Russia before the war—furs, timber, manganese, chromium, and handicrafts. But unless volume of purchases from Russia can be boosted by other $50,000,000 annually, credits of the size neces to fill immediate Russian needs could not be ser without large supplemental importations of undesi gold.

The nub of the situation is that Russia offers an traordinary potential market particularly for our h industries which have grown so enormously durin war. But if this sales outlet is to materialize, the United States must find a way to import from R (or from Russia's debtors if any) from ten to tw times as much as we did before the war. Instea merely going after the export business, American b nessmen must explore with the Russians the possib of buying bigger supplies of Soviet products.

☆ ☆ ☆

But more than the Russian market itself hinges sound cooperative action by the world's two lea military-industrial nations.

If trade between them is held to a minimum a relations are strained, the flow of trade all over world will be adversely affected.

Europe, long this country's biggest export outlet, tainly will never take the bold steps necessary to constitute its economy on a peacetime basis if R and the United States drift into a race for mili supremacy.

The Balkan states, which may be industrialized Moscow in order to reduce their dependence on G many, and the Arab world with its huge need transportation, irrigation, and sanitation, will not accept American credits or make big contracts American engineers if Moscow frowns on the dea

And refusal of Russia and the United States to w cooperatively to maintain the peace would kill, in t present embryonic stage, all dreams of a vast ind trialization program for China.

☆ ☆ ☆

The opportunity to make a major change in the t map of the world and at the same time to achiev sharp rise in our own standard of living is before

It demands of American business leaders the kin boldness and imagination that their predecessors played when they pioneered this country's unkn West.

It demands realistic action by men who know that solution to this country's *real* foreign trade prob under today's conditions lies in boosting *imports* exports alone . . . men who are not afraid of being p for what they sell.

It calls for leaders who will approach Moscow other major customers at once with constructive pl that would parallel in scope those on which this cou is waging war . . . leaders who will make it clear at outset that this bid for cooperative action emphatic demands that each nation shall have complete freed to determine its internal political and economic org zation without interference from the other.

It is *this* caliber of leadership upon which our fut hinges.

James H. McGraw, Jr.

President McGraw-Hill Publishing Company

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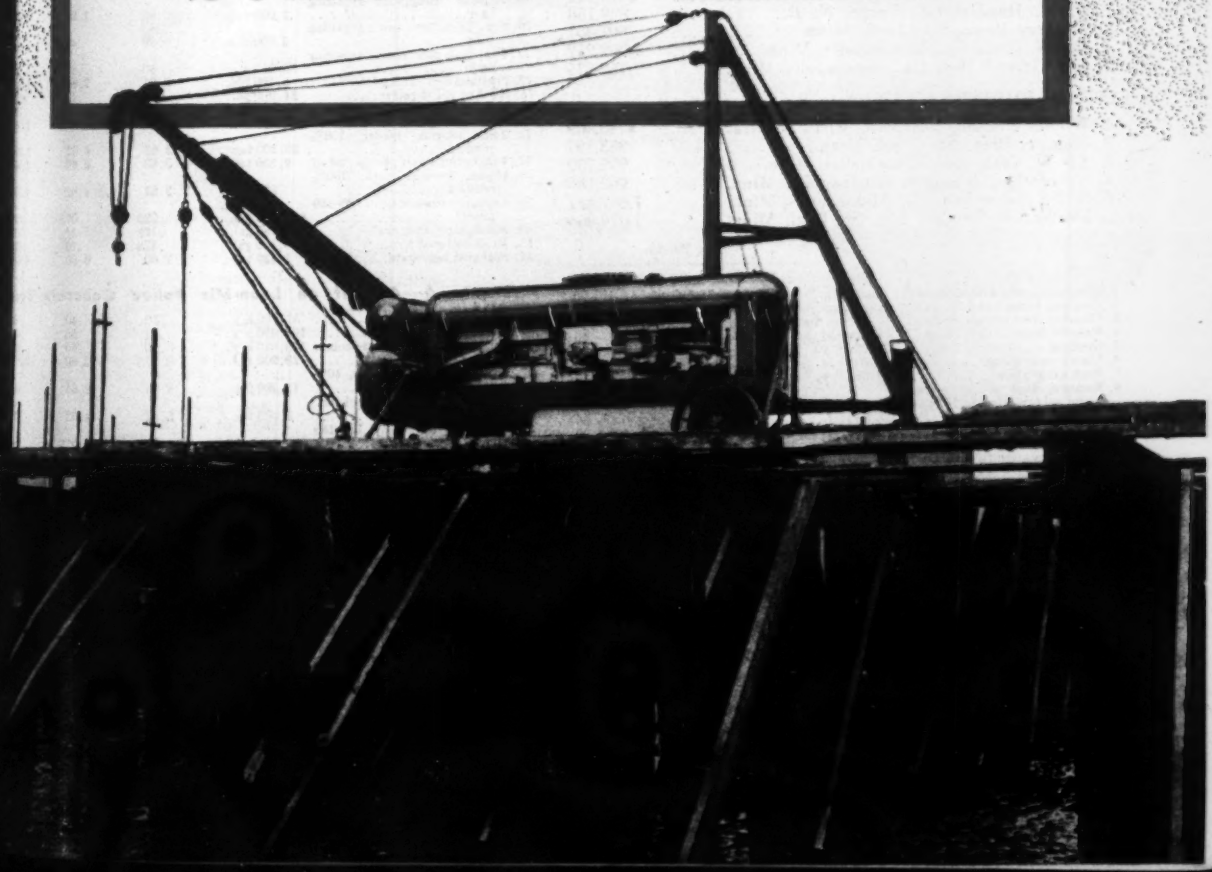


CONTRACT UNIT PRICES

What contractors are bidding on different kinds of construction work

AIRPORT, DULUTH, MINN.

OWNER: Civil Aeronautics Administration, Chicago. I. H. Polk, engineer.

PROJECT: Enlarging Williamson-Johnson Airport, Duluth, Minn., including repairing and resurfacing existing runways, and extending two runways, taxiways and aprons. Involves all necessary excavation; drainage structures; fertilizing and seeding; fencing; preparation of base course; and surfacing. Alternates were allowed on the runway extension and taxiways: Alternate A—asphalt on lean-mix rolled concrete base with granular sub-base; and Alternate B—asphalt on crushed aggregate base and granular sub-base. Award made on latter basis.

CONDITIONS: Contractor to furnish all materials and complete work in 120 calendar days. Rail, highway and water transportation facilities available. Work necessitates rehabilitation of existing airport; disintegrating portions of soil cement runways; patching and repatching with lean-mix concrete; and resurfacing with new bituminous surface binding; 6-in. soil cement base in place; 6-in. lean-mix concrete base will be placed over whole bituminous binder. Wage rates are: skilled labor, $1.25 to $1.625 per hour; semi-skilled, 87½c. to $1.25; and common labor, 77½c.

BIDS: Six bids were received March 29, 1944, ranging from the contract low of $780,469 to $1,079,866 on basis of Alternate B; and five bids ranging from the low of $821,611 to $1,152,875 on Alternate A.

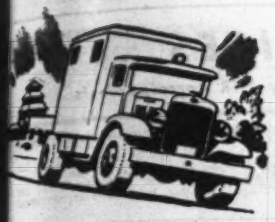
LIST OF BIDDERS: (Alternate A)

1. Wilmer Pierson, Dearborn, Mich.	$821,611
2. G. W. Haggart Co., Fargo, N. D.	849,158
3. Megarry Bros., St. Cloud, Minn.	891,451
4. Jay W. Craig Co., Minneapolis, Minn.	1,002,252
5. S. J. Grove & Sons Co., Minneapolis, Minn.	1,152,875

LIST OF BIDDERS: (Alternate B)

1. Wilmer Pierson, Dearborn, Mich. (contract)	$780,469
2. Megarry Bros., St. Cloud, Minn.	853,397
3. Jay W. Craig Co., Minneapolis, Minn.	955,750
4. George D. Alexander, Minneapolis, Minn.	962,106
5. S. J. Grove & Sons Co., Minneapolis, Minn.	1,057,421
6. Fielding & Shepley, Inc., St. Paul, Minn.	1,079,866

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clear and grub, within limits	Lump Sum	$1,400.00	$1,600.00	$2,750.00
2. Clearing Areas 1 and 2	Lump Sum	1,000.00	800.00	1,100.00
3. Clearing trees outside limits	100 in. dia.	1.00	.25	.60
4. Remove fence outside limits	100 rod	.50	.25	.60
5. Grading	572,000 c.y.	.20	.195	.27
6. Marsh excavation	36,000 c.y.	.27	.50	.50
7. Rock excavation	1,000 c.y.	5.00	2.50	3.50
8. Remove, clean and store sewer and culvert pipe, to 10-in.	3,840 l.f.	1.10	.80	.75
9. As above, 12 to 21-in.	3,860 l.f.	1.40	1.10	.85
10. As above, over 21-in.	400 l.f.	1.85	1.50	1.00
11. Open ditch excavation	3,000 c.y.	.20	.50	.50
12. Rock excavation for trenches	200 c.y.	5.00	10.00	10.00
13. Install salvaged sewer and culv. 8-in.	1,025 l.f.	.60	.85	.50
14. As above, 10-in.	3,905 l.f.	.80	1.00	.60
15. As above, 15-in.	975 l.f.	1.00	1.15	.75
16. 6-in. open joint underdrains	660 l.f.	.60	.85	.75
17. 8-in. open joint underdrains	1,300 l.f.	.70	1.05	.80
18. 10-in. open joint underdrains	260 l.f.	1.25	1.15	1.00
19. Remove, clean and replace underdrain pipe, 8 to 10-in.	1,800 l.f.	1.20	.95	.75
20. As above, 12 to 15-in.	1,200 l.f.	1.40	1.25	1.00
21. Open joint underdrain installed in French drains, 6-in.	29,700 l.f.	.25	.45	.35
22. Granular backfill for underdrains	4,470 c.y.	1.35	.65	1.00
23. Granular backfill when pipe not removed (incl. excav.)	5,750 c.y.	1.50	1.40	1.60
24. Granular backfill for French drains (incl. excav.)	6,600 c.y.	1.95	1.50	1.60
25. Remove and reinstall 8-in. sewer pipe	200 l.f.	1.50	1.60	2.00
26. 12-in. storm sewer pipe	1,600 l.f.	2.20	1.95	2.10
27. 15-in. storm sewer pipe	970 l.f.	2.70	2.40	2.50
28. 21-in. storm sewer pipe	505 l.f.	4.00	3.95	3.50
29. 18-in. storm sewer pipe	700 l.f.	3.20	2.90	4.25
30. 42-in. storm sewer pipe	645 l.f.	9.95	10.30	3.00
31. 15-in. storm sewer pipe	80 l.f.	2.70	2.40	10.25
32. 18-in. storm sewer pipe	677 l.f.	3.30	2.90	2.60
33. 24-in. storm sewer pipe	670 l.f.	4.50	4.45	3.10
34. 30-in. storm sewer pipe	2,615 l.f.	6.30	6.25	4.60
35. 36-in. storm sewer pipe	315 l.f.	7.70	8.00	6.00
36. 24-in. extra str. sewer pipe	210 l.f.	4.70	4.60	8.25
37. 36-in. extra str. sewer pipe	465 l.f.	8.55	8.85	4.25
38. 42-in. extra str. sewer pipe	120 l.f.	11.15	11.50	9.10
39. 21-in. triple str. conc. sew. pipe	2,188 l.f.	4.10	3.95	11.25
40. Type A manholes	34 ea.	125.00	140.00	4.00
41. Concrete for inlets, headwalls and drainage structures	150 c.y.	30.00	40.00	140.00
42. Reinforcing steel	657 lb.	.10	.10	42.00
43. 30-in. concrete grate bars	541 ea.	2.00	.75	.10
44. Raising manholes and inlets	23 ea.	10.00	10.00	2.25
45. Lowering manholes, 1-ft. or less	10 ea.	10.10	6.00	15.00
46. Lowering manholes, more than 1-ft.	3 ea.	25.00	10.00	30.00
47. Abandoning manholes and inlets	12 ea.	10.00	25.00	10.00
48. Convert manholes	1 ea.	40.00	60.00	55.00
49. Convert inlet to manhole	1 ea.	50.00	25.00	50.00
50. Remove manhole	1 ea.	50.00	20.00	25.00
51. 6-in. riprap or concrete flumes	180 s.y.	2.50	3.50	4.00
52. Fertilizing	220 ac.	12.00	10.00	12.00
53. Seeding rye	230 ac.	2.50	2.50	4.00
54. Seeding mixture	230 ac.	12.00	10.00	16.00
55. Sodding	32,000 s.y.	.30	.27	.40
56. Brushing fence lines	200 rod	.50	1.00	1.00
57. Clearing trees on line	400 rod	.50	1.50	1.25
58. Class C fence	1,520 rod	2.50	4.50	4.00
59. Bench and runway markers	12 ea.	8.00	15.00	6.00
60. Driveway and parking area surf. mat'l	730 c.y.	2.50	2.15	1.00
61. 3-in. underground ducts, 2-bank	3,220 l.f.	2.00	1.80	2.00
62. 3-in. underground ducts, 3-bank	232 l.f.	2.50	2.55	3.00
63. 3-in. underground ducts, 4-bank	445 l.f.	3.00	3.00	4.00
64. 3-in. underground ducts, 6-bank	580 l.f.	4.00	5.00	5.00
65. 3-in. underground ducts, 10-bank	58 l.f.	8.00	6.50	8.00
66. 8-in. granular sub-base, conc. apron	4,390 s.y.	.30	.40	.35
67. 9-in. uniform Class A spec. conc.	4,108 s.y.	4.00	3.50	3.50
68. Remove soil cement; repairing base	35,000 s.y.	.05	.12	.17
69. Replace subgrade; repairing base	2,000 c.y.	.60	1.20	.80
70. 8-in. gran. sub-base; repairing base	3,000 s.y.	.30	.40	.45
71. 6-in. lean-mix conc.; repairing base	35,000 s.y.	.50	.60	.60
72. Portland cement for Item 71	5,100 bbl.	2.21	2.60	2.90
73. RT-2 or RT-3 prime	34,000 gal.	.125	.13	.12
74. MC-1 in lieu of tar for prime	—— gal.	.125	.105	.10
75. Hot-mix leveling course	20,000 ton	2.10	2.05	2.75
76. 2-in. hot-mix binder, 100% crushed	20,200 ton	2.68	4.02	3.00
77. 1-in. hot-mix surf., 40% crushed	9,550 ton	3.83	2.65	3.00
78. 1½-in. hot-mix surf., 100% crushed	820 ton	3.83	4.02	4.00
79. Asphalt cement, 120–150 penetr.	655,000 gal.	.095	.075	.08
80. Emul. asph. tack coat	38,180 gal.	.125	.11	.11
81. RC-2 seal coat	38,120 gal.	.125	.10	.095
82. Seal coat aggregate	1,430 ton	7.00	6.80	6.00
Alternate A—Asphalt on Lean-Mix Rolled Concrete Base				
83. 8-in. granular sub-base	31,700 s.y.	.30	.40	.35
84. 11-in. granular sub-base	109,000 s.y.	.41	.50	.48
85. 6-in. lean-mix conc. base course	138,820 s.y.	.50	.60	.55
86. Cement for Item 85	20,200 bbl.	2.21	2.60	2.90
87. 2-in. surf. crse., hot-mix, 40% crushed	12,300 ton	3.83	2.65	3.00
88. 2½-in. surf. crse., hot-mix, 100% crushed	3,000 ton	3.83	4.02	4.25
89. Asphalt cement, 120–150 penetr.	230,000 gal.	.095	.075	.08
90. Emul. asphalt tack coat	3,000 gal.	.125	.11	.11
91. RC-2 seal coat	30,500 gal.	.125	.10	.10
92. Seal coat aggregate	1,000 ton	7.00	6.80	6.00
Alternate B—Asphalt on Crushed Aggregate Base				
93. 8-in. granular sub-base	31,700 s.y.	.30	No Bid	.35
94. 11-in. granular sub-base	109,000 s.y.	.41	No Bid	.48
95. 9-in. crushed aggregate base course	138,200 s.y.	.50	No Bid	.62
96. RT-2 or RT-3 prime	28,000 gal.	.125	No Bid	.13
97. MC-1 in lieu of tar in prime	—— gal.	.125	No. Bid	.10
98. 2-in. hot-mix surf. course, 40% crushed	12,300 ton	3.83	No Bid	3.00
99. 2½-in. hot-mix surf. crse, 100% crushed	3,000 ton	3.83	No Bid	4.25
100. Asphalt cement, 120–150 penetr	230,000 gal.	.095	No Bid	.08
101. Emul. asphalt tack coat	3,000 gal.	.125	No Bid	.11
102. RC-2 seal coat	30,500 gal.	.125	No Bid	.10
103. Seal coat aggregate	1,000 ton	7.00	No Bid	6.00



Typical of the exhaustive field tests which marked the development of the modern, high speed Cummins Diesel, was the gruelling 14-day period which came to an end on Christmas Day, 1932, at the Indianapolis Speedway. Here, under AAA supervision, a Cummins-powered Indiana truck set a non-stop distance record for trucks: 14,600 miles (3,840 laps of the 2½-mile oval!).

The injector cup wiper is an inconspicuous part of the Cummins Diesel, but its development made a conspicuous contribution to the Cummins Diesel's efficient and economical performance. This patented cup wiper, perfected only after countless modifications in piston design, eliminates carbon on the injector cup, creates additional turbulency, assures more complete combustion.

Metallurgy plays an important role in the Cummins Diesel trend to ever lighter, stronger construction. Example: 5,000 samples were analyzed in selecting the cast iron for the block—a foundry was rebuilt and its methods completely revised—but the increase in tensile strength from 20,000 to 50,000 pounds per square inch more than justified the cost.

CUMMINS DEPENDABLE DIESELS

Automotive Models: Designed for all types of heavy-duty trucks in either highway or off-the-highway service.

★ ★ ★

Industrial Models: Portable and stationary engines, power units, and generating sets for service in any industry requiring heavy-duty power.

★ ★ ★

Marine Models: Propulsion engines and marine type generating sets designed for all types of fishing boats, work boats, and pleasure craft.

Spade Work

The diesel's higher thermal efficiency was proved many years ago . . . but it took the builders of Cummins Diesels to prove that diesel engine weights and dimensions could be brought within practicable limits. They proved it in 1932 with the original high speed diesel . . . proved it after 14 years of intensive "spade work" in the refinement of lubrication, cooling, metallurgy and many other aspects of design and construction . . . proved it by putting diesels in equipment and on jobs where diesels had never worked before. Today, you will find diesels in virtually every automotive, industrial, and marine service that requires heavy-duty power . . . and if you look closely enough, you'll find a very large proportion of those diesels are Cummins Dependable Diesels.

CUMMINS ENGINE COMPANY, INC., Columbus, Ind.

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents

CONSTRUCTION MATERIAL prices and labor rates for November reveal only minor changes from the preceding month according to reports from 20 cities to *Engineering News-Record*. Portland cement is 10c. per barrel higher in Cincinnati, but off 4c. in New York. Ready-mixed concrete is up 10c. per cu. yd. in Cincinnati, 15c. higher in Detroit, and up 25c. in Minneapolis due to the hauling charge, but 25c. lower in New York.

Paving asphalt is 60c. per ton higher in Cincinnati. Common brick increased in Chicago, Kansas City and Minneapolis. Structural clay tile increased in Minneapolis. Roofing supplies are up in Birmingham.

Douglas fir prices are mixed in Minneapolis, up on the 1x6-in. and 2-in. sizes, but lower on 1x8-in. Short-leaf yellow pine is $1.00 to $2.00 higher in St. Louis.

The Detroit rate for structural ironworkers increased from $1.775 to $1.925 per hour, the only change reported from a month ago. Common labor rates are unchanged from October.

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F.O.B. CITY

	PORTLAND CEMENT Per bbl., C/L lots, incl. 40c. per bbl. for bags, cash dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.; truckload del.; per block		CONCRETE Ready Mixed 1:2:4, over 50 c.y., del.
	Cloth *a*	Paper	Bulk	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand-grav.	Lt.wgt. Agg.	
Atlanta	$2.77	$2.52	$2.47	$1.79	$1.89	$1.99	$1.79	$1.89	$1.59	$1.69	$0.17	....	$8.00
Baltimore	2.53	2.28	2.03	1.75‡	1.75‡	1.25‡	1.75‡	1.75‡	1.75‡	1.75‡	.125	$0.125*w*	7.35
Birmingham	2.50	2.25	2.10	1.75	1.75	1.50	.85	1.00	.90	1.15	.1425	....	5.80
Boston	2.97*b*	2.72*b*	2.52	1.50‡	1.50‡	1.05‡	1.25‡	1.35‡	....	....	.13	.155*w*	7.55*m*
Chicago	2.70	2.45	2.30	2.15‡*d*	2.15‡*d*	2.15‡*d*	2.15‡*d*	2.15‡*d*	1.75‡	1.75‡	.16	.16*x*	....
Cincinnati	2.41	2.16	1.91	1.20	1.20	1.10	1.80	1.80	....	....	.12	.15*w*	6.70
Cleveland	2.49	2.24	....	1.75*i*	1.75*i*	1.55*i*	1.80*i*	1.80*i*	1.73*i*	1.73*i*	.14	.14	7.45
Dallas	2.52	2.27	2.07	1.50*p*	1.70*p*	1.10*p*	1.69*p*	1.79*p*	....	....	.15	....	6.20
Denver	3.08	2.88	2.32	1.20	1.30	1.25	1.65	1.75	1.00	1.00	.15	....	7.25
Detroit	2.49	2.24	2.09	1.50	1.50	1.50	2.25	2.25	2.00‡	2.00‡	.13	.14*w*	7.15
Kansas City	2.58	2.33	2.18	1.85	2.30	1.00	1.91	1.91	....	....	.125	.125*wy*	7.50*n*
Los Angeles	3.00*v*	2.40*v*	....	1.30	1.30	1.15	1.30*f*	1.30*f*	....	....	.045*bb*	.10*aa*	7.25
Minneapolis	2.90	2.65	....	1.00*h*	1.00*h*	.25*h*	1.00*h*	1.00*h*	....	....	.12	.16	7.35*j*
Montreal	....	1.95*rs*	1.79*rs*	1.65‡*s*	1.65‡*s*	1.50*t*	.80*ct*	.90*ct*	....	....	.14*t*	.14*wt*	7.85*u*
New Orleans	2.42	2.16	1.96	1.67	1.65	1.22	....	....	....	....	.19	....	9.25
New York	2.85‡	2.60‡	....	1.60*de*	1.60*de*	.90*de*	1.70*de*	1.80*de*	....	....	.16	.14*wcc*	7.50*k*
Philadelphia	2.73	2.48	2.28	1.55‡	1.65‡	1.20‡	1.90	1.95	1.10	1.10	.155	.155*w*	8.45
Pittsburgh	2.55	2.30	2.10	1.65‡	1.65‡	1.85*d*-*l*‡	2.25‡	2.25‡	1.50	1.50	.17	.17*z*	8.25
St. Louis	2.80	2.52	....	1.75‡	1.75‡	1.25/1.50‡	1.10*h*	1.10*h*	.75*g*	.75*g*	.145	.13*w*	8.00
San Francisco	....*u*	2.21	1.91	1.36	1.36	1.36	1.46	1.46	....	....	....	.20*y*	7.55
Seattle	2.95*o*	2.75*o*	....	1.00*o*	1.00*o*	1.00*o*	2.00*o*	2.00*o*	....	....	.16	.16*y*	7.25

‡ Delivered. *a* 10c. allowed for each returnable bag *b* 10c. per bbl. off for cash. *c* F.o.b. quarry. *d* Per cu. yd. *e* Barge lots alongside docks. *f* Crushed granite. *g* F.o.b. Granite City, Ill. *h* F.o.b. plant. *i* Within three miles of Public Square. *j* 5% discount for cash. *k* Discount of 2 percent for cash in 10 days. *l* Up to 200 cu. yd. *m* 50c. off for cash. *n* 25 c.y. or more. *o* 2% off for cash. *p* 10c. per ton off, cash 15 days. *r* 10c. per bbl. off, cash 20 days. *s* 8% sales tax included. *t* 8% sales tax not included. *u* Price withdrawn. *v* 20c. per bbl. discount; 20c. allowed for returnable cloth bag. *w* Cinder. *x* Waylite. *y* Haydite. *z* Celocrete. *aa* Pumice. *bb* 4 x 8 x 12 in. *cc* Also 8 x 18 x 18 in.

CASH DISCOUNTS CEMENT to Contractors: truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10c. per bbl. for payment within 15 days of date of invoice. Subject discount 10c. per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICE BASES AT CEMENT MILL

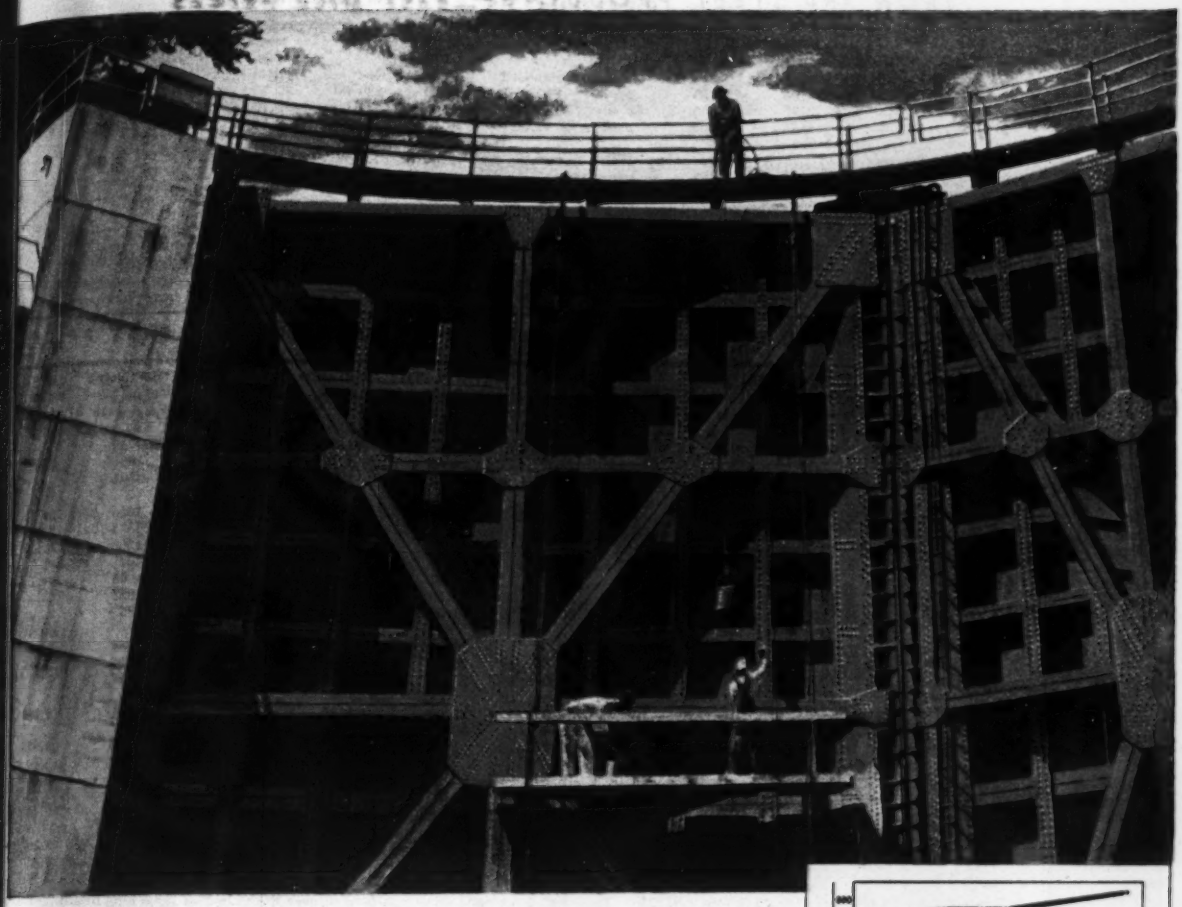
Charge for bags not included. For cloth bags, add 40c. per bbl.; 10c. refund allowed for each returnable bag; for paper bags add 15c. per bbl., not refundable.

	Bagged	Bulk		Bagged	Bulk		Bagged	Bulk
Buffington, Ind.	$1.70	$1.65	Ironton, Ohio	$1.70	$1.65	Richard City, Tenn.	$1.80	$1.75
Dallas, Tex.	....	....	Limedale, Ind.	....	....	Steelton, Minn.	1.80	1.75
Hannibal, Mo.	1.70	1.65	Norfolk, Va.	....	....	Universal, Pa.	1.75	1.70
Hudson, N. Y.	....	....	Northampton, Pa.	1.75	1.70	Waco, Tex. (Plus 9c. tax in Tex.)	1.75	1.70
Independence, Kans.	1.70	1.65	North Birmingham, Ala.	....	....	Montreal (8% sales tax incl.)	1.68	1.67
						Discount 10c. per bbl. 20 days		

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F.O.B. CITY

	PAVING BRICK AND BLOCK Granite per M. lots of 50,000 4x4x8 in.	Brick per M 3x4x8¼ in carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	PAVING ASPHALT Per ton, less than 80 penetration Tank car	Drums	ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration Tank car	Drums	CUTBACK ASPHALT Per ton Tank car	Drums	ROAD OIL Per gal. Tank car	ASPHALT EMULSION (Quick-breaking) Per gal. Tank car	Drums
Atlanta	$73.00	$39.35	$2.25	$18.53*e*	$24.62*e*	$0.0740*e*	$0.1309*e*	$0.0802*he*	$0.1348*h*	$0.0676*e*	$0.0826	$0.1384
Baltimore	150.00‡	49.00	82.50*m*	15.00*r*	21.00*r*	.06*r*	.09*r*	13.00*r*	23.00*r*	.065*r*	.07*r*	.14*r*
Birmingham	150.00	48.00	.....	17.95	.....†	.0747	.....†	.0834*h*	.....†	.065	.09	.....†
Boston	85.00	59.00	3.75	17.00	24.00	.20	.22	25.00	30.00	.....	.1125	.1325
Chicago	150.00	55.00	2.50/2.80*d*	14.00	22.50	13.00*g*	21.50*g*	.0575*h*	.15*h*	.05*n*	.09/10*n*	.13/.15*n*
Cincinnati	120.00	50.00	.....	17.00	.....	.085	.....	12.25	.....	.07	.085	.....
Cleveland	118.00	37.25	2.50	16.00	18.00	.085	.095	.10*h*	.....	.095	.095	.....
Dallas	.....	36.00	.....	13.65	20.30	.06	.11	16.00	24.80	.06	.05/.07	.07/.09
Denver	.....	16.11	.....	11.00	.....	10.00	.....	.045*h*	.....	.....	.....	.....
Detroit	.....	37.00	.....	18.06*f*	25.60*f*	.0743	.128	.0718*h*	.119*h*	.067	.0775	.1149
Kansas City	.....	40.00	.....	18.50	23.50	.077	.1075	.077*h*	.107*h*	.057	.11	.15
Los Angeles	.....	50.00	.....	9.00*b*	23.00	9.50*bg*	24.00*bg*	9.50*b*	.....	.025	.072	.15
Minneapolis	.....	.....	2.30*d*	.....	27.70	.....	.126	.....	32.64	.....	.....	.....
Montreal	92.40	.....	.....	16.60*k*	24.25*k*	.116*k*	.1485*k*	.115*hk*	.135*hk*	.08*k*	.135*k*	.188*k*
New Orleans	.....	.....	.....	13.50*a*	20.00*a*	.057	.088	.06*h*	.095*h*	.....	.080	.....
New York	.....	65.00	.....	17.40	24.20*p*	14.00	.....	.0725*h*	.1325*hp*	.....	.0725*p*	.119*p*
Philadelphia	140.00	58.00	4.06	15.00*r*	.....	14.00*r*	.....	.065*hr*	.....	.....	14.00*rr*	.....
Pittsburgh	135.00	38.75	.....	18.00	23.00	.09	.16	20.00	36.00	.07	.06	.11
St. Louis	.....	37.00	.....	16.00	22.00	15.00*g*	21.00*g*	.0575*h*	.1212*h*	.048	.06	.11
San Francisco	.....	40.00	.....	10.90	21.15	10.90*g*	18.00*gr*	12.90	17.50*r*	9.50*gr*	.0525	.1125
Seattle	.....	60.00*c*	.....	10.90*i*	23.40*i*	.....	20.40*gi*	11.40*i*	.....	.....	.0525*i*	.0625

‡ Delivered. *a* F.o.b. Baton Rouge. *b* Delivered to purchaser's warehouse. *c* 3½x4x8¼ in. *d* 2¼ in. 12-lb. treatment. *e* Local reduction due to 20% reduction intra-state class freight rates, only Georgia affected. *f* Mexican. *g* Per ton. *h* Per gallon. *i* F.o.b. Martinez. *j* 3x3½x8¼ in. *k* Tax included. *m* Per thousand. † Available on priority only and quoted specially. *p* No steel drum shipments except to armed forces. *r* February 1943 prices, none later available.



INHIBITS RUST — *to make metal LAST!*

The test report at the right will interest men responsible for safeguarding America's metal structures from rust.

For it indicates that Red Lead actually *inhibits* rust . . . that it gives a protection "plus"—over and above its primary action of keeping the weather out.

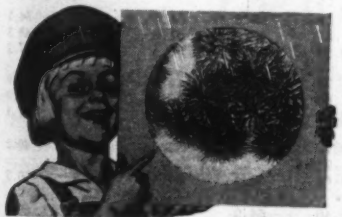
So chalk up one more reason why Red Lead is America's long-time choice for *making metal LAST.*

Another answer to why Red Lead stands guard so faithfully is that its film is reinforced by "lead soap" formations, as explained under the photomicrograph which appears at left.

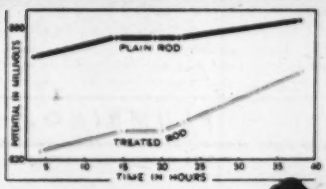
And Dutch Boy gives you highly oxidized red lead, having a true red lead (Pb_3O_4) content of more than 97% and extremely fine particle size. This means a tough, smooth protective film that sticks tight and says "halt" to metal saboteurs like salt water, sulfurous gases, dampness and smoke.

You can obtain Dutch Boy Red Lead as a special quick-drying paint, in addition to the standard paste and paint forms. The quick-drying form is invaluable where drying time must be held to a minimum. It dries tack-free in 4 to 6 hours and may be recoated the next day.

The full story of red lead's metal-protecting properties is told in our booklet "Longer Life with Red Lead." Write nearest branch office for your copy.



RED LEAD in paint combines with the liquid vehicle to produce a distinctive type of metallic "soap" formation, with a fibrous structure consisting of multiple projections radiating from a central core. This photomicrograph shows how lead soaps spread out and mechanically reinforce the paint film. It is also characteristic of "lead soaps" that they allow movement all along their intermeshing projections. This is beneficial to the life of the paint as, once the elastic limit of the dried oil film and the soap particles is exceeded, the soap particles will still "give" in this manner. This action prevents the ruptures to which a hard, unyielding paint film is subject.



THE ABOVE GRAPH shows results of a recent test of red lead's rust inhibitive action, reported by Dr. A. H. Stuart in "Paint Manufacture" (Vol. IX, No. 1).

Dr. Stuart immersed a steel rod in a thin paste of red lead and water for one hour, after which it was taken out and thoroughly washed to remove all trace of the red lead. Although all pigment was thus removed the treated rod showed decidedly greater resistance to rusting than did an untreated rod. In fact the rust inhibiting action, while it steadily diminished, had not entirely disappeared after forty hours!

In the electrical potential measurement method used, a lower point on the scale indicates greater resistance to rusting.

NATIONAL LEAD COMPANY: New York 6, Buffalo 3, Chicago 80, Cincinnati 3, Cleveland 13, St. Louis 1, San Francisco 10; Boston 6 (National-Boston Lead Co.); Pittsburgh 30 (National Lead & Oil Co. of Penna.); Philadelphia 7 (John T. Lewis & Bros. Co.).

DUTCH BOY RED LEAD

—makes metal LAST!

IRON AND STEEL PRODUCTS—BASE MILL PRICES

	STRUCT. SHAPES-PLATE	REINF. BARS ¼-in. billet *b*	RIVETS ½-in. structural	WIRE NAILS Base *d*	SHEET PILING Base	STEEL RAILS Per Gross Ton Standard	Light	Re-rolled	TRACK SUPPLIES Angle Bars	Std. Spikes *e*	Tie Plates *e*	Track Bolts
Birmingham	$2.10	$2.15	$3.75	$2.55	.....	$40.00	$40.00	$39.00	$2.70	$3.00	$2.15	$4.75
Chicago	2.10	2.15	3.75	2.55	$2.40	40.00	40.00	39.00	2.70	3.00	2.15	4.75
Pittsburgh	2.10	2.15	3.75	2.55	2.40	40.00	40.00	39.00	2.70	3.00	2.15	4.75
Buffalo	2.10	2.15	.....	.....	2.40	.....	.....	.....	.....	.....	2.15	.....
Cleveland	2.10	2.15	3.75	2.55	.....	.....	.....	.....	.....	.....	.....	.....
Youngstown	.....	2.15	.....	.....	.....	.....	.....	.....	.....	3.00	.....	.....
Detroit	.....	2.27‡	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gulf ports	2.47*a*	2.52*a*	.....	.....	2.85*a*	.....	.....	.....	.....	.....	.....	.....
Pacific ports	2.75*a*	2.80*a*	.....	3.05	2.95*a*	.....	.....	.....	.....	.....	2.30	.....

‡ Delivered. *a* F.o.b. cars dock. *b* Rail steel same as billet prices. *c* Other basing points include Portsmouth, O., Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., and Pacific coast ports, on tie plates alone, Steelton, Pa., on spikes alone, Lebanon, Pa., Richmond, Va. *d* Add switching charge $18 per c.l.

IRON AND STEEL PRODUCTS—F.O.B. WAREHOUSE, PER 100 LB., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS* Per 100 lb., ¼ in., base price 15 tons or over *b* New billet	Rail steel	Add Switch	$/cwt. for Del.	EXPANDED METAL LATH Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq. yd., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in. No. 6 & 6 wires Per sq. yd.	SHEET PILING Per 100 lb. base price
Atlanta	$2.34	$2.40	$2.40	$.02½	$.10	$21.06	$23.00	$1.82	$1.35	$0.1719	$3.04
Baltimore	3.70	2.90	2.75	.....	.10	22.50	24.50	1.70	1.27	.1611	3.00
Birmingham	2.10*a*	2.15	2.15	.02½	.10	19.00	21.00	1.80	1.34	.1701	....
Boston	3.912	3.994	....	$20 C.L.	.10	18.50	29.50	1.76	1.31	.1656	2.77
Chicago	2.10*a*	2.15	2.15	.03	.05	21.50	23.50	1.67	1.25	.1575	2.40
Cincinnati	3.68	2.53*cd*	2.53*cd*	.....	.05	19.50	21.50	1.66	1.25	.1566	....
Cleveland	2.10*a*	2.15	2.15	.02½	.10	19.50	21.00	1.66	1.25	.1566	....
Dallas	4.25	3.17	3.17	.....	....	25.00	27.50	1.93	1.42	.1827	....
Denver	4.57	3.33*kl*	....	.....	....	26.50	26.50	1.97	1.45	.186	....
Detroit	3.65‡	2.52‡	2.52‡	.....	.10	30.00	30.00	1.68	1.26	.1584	2.66
Kansas City	4.19	2.61*cd*	2.61*cd*	.0	.05	24.50	26.50	1.78	1.33	.1683	2.874
Los Angeles	3.65*f*	2.575	2.425	.02½	.05	23.00	27.50	1.93	1.42	.1827	3.65
Minneapolis	3.81‡	2.73	2.73	.0	.10	25.00	27.00	1.80	1.34	.1701	2.73*d*
Montreal	3.95*i*	2.90*i*	2.80*i*	.....	....	31.00*hi*	46.00*hi*	2.76	3.44*i*	.282*i*	....
New Orleans	4.229‡*k*	2.52	2.52	.05	.10	19.00	21.00	1.82	1.35	.1715	2.875
New York	3.75	2.76*c*	2.76*c*	.....	.15	17.50	19.50	1.76	1.32	.1665	2.74
Philadelphia	3.666	3.668	....	.....	....	19.50	21.50	1.71	1.28	.1611	2.72
Pittsburgh	2.10*a*	2.15	2.15	.02½	.10	23.00	26.50	1.59	1.20	.1503	2.40
St. Louis	3.697	2.74	2.74	.0	.05	28.00	34.00	1.69	1.27	.1602	2.70
San Francisco	4.35	2.825	2.675	.02½	.10	21.00	24.50	1.93	1.42	.1827	3.85
Seattle	2.75*e*	2.80*e*	....	.....	....	34.50	38.50	1.93	1.42	.1827	2.95*ej*

‡ Delivered. *a* Mill prices. *b* 5-15 tons, add 15c. 1-5 tons, add 25c. Less than 1 ton, add 50c. *c* 20 tons or over Base. *d* Mill price plus freight. *e* F.o.b. dock. *f* Includes delivery in free delivery zone. *g* Less than 1 ton, add 25c.; 1 to 5 tons, add 10c. * High scrap steel prices cut former 15c. differences between new billet and rail steel in many mills. *h* List price. *i* Plus Dominion and Province sales tax. *k* Quotation on changed basis; no actual price change. *l* Approximate Denver price out of wholesale stocks, based on Chicago area; not comparable with preceding prices.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in to 24 in.*a*	VITRIFIED SEWER PIPE Per foot, std. 8 in., s.s.	Delivered std. 12 in., s.s.	ASTM 2-in.,	C-3-35 36 in.	CLAY DRAIN TILE Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered; ASTM 12 in.	C 14-35 24 in.	WROUGHT STEEL PIPE Full standard weight, *h* 1 to 3 in., Black %	Butt Weld 3½ to 6 in.; Galv. %	Lap Weld Black %	Galv. %
Atlanta	$ .66	$0.26*b*	$0.468*bc*	$1.8525	$4.68*c*	$85.00	$*28.00	$0.45	$1.642	48.2	54.2	59.7	51.2
Baltimore	53.00	.35	.60	2.70	7 25	160.00	200.00	.55	1.80	65.5	57.5	6..0	54.5
Birmingham	45.00	.275	.495	1.95	5.50	100.00	220.00	.50	1.70	62.2	54.2	59.7	51.2
Boston	55.40	.371*r*	.7155*r*	2.79*r*	7 6875*r*	155.00‡*r*	245.00‡*r*	.60	1.95	....	....	...	....
Chicago	54.33	.*75	.675	2.70	7 00	100.00‡	150.00‡	.45	1.85	66.0	55.0	64.5	53.0
Cincinnati	53.27	.231	.4455	1.80	5.125	105.00‡*s*	170.00‡*s*	.75*t*	1.75*t*	57.1	43.4	5..0	39.6
Cleveland	54.75	.266*r*	.513*r*	2.115*r*	5.535*r*	90.60	139.40	.36	1.38	68.5	57.5	66.0	54.5
Dallas	56.43	.31	.58	2.25	5.00	90.00	110.00	.46	1.57	59.9	51.9	57.3	48.3
Denver	61.56	.29†	.52†	2.16†	3.00*n*	125.00	200.00	1.00	2.22	58.4	50.4	55.7	47.2
Detroit	54.75	.35	.675	2.70	7.75	135.00	200.00	.40	1.75	57.6	44.0	54.5	40.2
Kansas City	55.73	.35	.59	2.20	6.20	140.00	260.00	.45	1.60	35.9	46.4	46.6	9.9
Los Angeles	68.40	.325†	.585†	2.70†	6.75†	130.50	217.50	1.00	2.00	61.1	50.1	58.6	47.1
Minneapolis	57.47	.305†	.549†	2.196†	6.25†	.....	.....	.90	2.10	64.2	53.2	60.7	49.2
Montreal	67.00	.85*o*	1.50*o*	5.25*n*	8.50*en*	45.00*m*	64.00*m*	.48*m*†	1.92*m*†	....	....	....	....
New Orleans	51.78	.38*r*	.68	1.69	....	150.00	220.00	.45	1.65	62.4	54.4	58.8	50.3
New York	52.40	.308	.594	2.52	6.45	.....	.....	.60	1.40	64.9	53.9	62.4	50.9
Philadelphia	51.00	.335	.675	2.75	7.50	150.00	225.00	.45	1.75	56.6	42.8	53.6	39.1
Pittsburgh	56.00	.266†	.513†	2.295†	5.945	97.80	154.20	.85*g*	2.00*g*	68.5*u*	57.5*i*	66.0*i*	54.5*i*
St. Louis	53.62	.28	.504	2.016	4.50	85.00	220.00	1.00*j*	2.00*k*	56.4	42.6	52.5	38.4
San Francisco	68.40	.3625*d*	.6525*d*	2.61	6.52	115.00	192.50	.58	2.34	45.0	31.0	41.0	26.0
Seattle	70.20	.375	.675	2.70	6.75	115.20	.....	.51*f*	1.44*f*	....	....	....	....

‡ Delivered. † F.o.b. *a* B. & S. class B and heavier, C/L lots, 200 tons and over Burlington, N. J. (base) $49.00. Based on existing freight rates; subject to rate change. Gas pipe and class A, $3 per ton additional, 4 in., $3 per ton additional, 30 in. and larger usually $2 per ton less. *b* Double strength. *c* List to dealer. *d* List. *e* 30-inch. *f* Less 5% for cash. *g* Culvert pipe. *h* Discounts from standard list consumers carload prices, except Pittsburgh prices are f.o.b. mill. Base price $200 per net ton. List prices per ft.: ½ in., 8½c.; ¾ in., 11½c.; 1 in., 17c.; 2 in., 37c.; 2½ in., 58½c.; 3 in., 76½c.; 4 in., $1.09; 6 in., $1.92 3 per cent tax on transportation costs not included. *i* Applies also at Lorain, Ohio, mills. Chicago delivered base is 2½ points less on butt, 1½ on lap. Freight is figured from Pittsburgh, Lorain, O., Chicago Dist. Billing is from point producing lowest price at destination. WROUGHT IRON PIPE: Base price and list prices per ft. same as wrought steel pipe. Discount for Pittsburgh base. Butt-weld—1 in. and 1¼ in. black 34, galv. 16; 1½ in. black 38, galv. 18½; 2 in. black 37½, galv. 18. Lapweld—2½ in. to 3½ in. black 31½, galv. 14½; 4½ in. to 8 in. black, 32½ galv. 17. *j* Reinforced; spec. C 76-37. *k* Reinforced; spec. C 75-37. *l* Plus sales tax. *m* Tax included. *n* 27-in. pipe. *o* Less 50%. *p* Less 53%. *r* Truck delivery. *s* Price quotations on delivered basis since Mar. 1940; current f.o.b. price $84 for 6 in.; $130 for 8 in. *t* Reinforced pipe prices since May, 1937; current plain pipe prices are: 12 in., 36c.; 24 in., $1.50.

The Watch that aimed at the Stars

Strictly speaking, precision time is the time of the stars. No watch in the world can match its perfection.

Gruen has tried to come as close to it as is humanly possible. In fact, Gruen is the one watch permitted to carry the trademark "Precision."

Behind this trademark lie 70 years of skill and craftsmanship . . .

Behind it are revolutionary new departures in design like the famous patented Gruen Curvex . . . a watch so daring, so different it is actually protected by a patent until 1959!

If you want a watch that gives you the utmost in precision, along with the very latest in style, be sure to see the new Gruen Watches. Ask your Gruen jeweler for the patented Gruen Curvex or the equally famous patented Gruen Veri-Thin.

While we have been manufacturing large quantities of vital precision instruments for war, we also continue to produce fine Gruen Watches for civilian use . . . but of course the demand for these watches far exceeds production possibilities today.

Illustrated above — Curvex† Collegian, 17-jewel Precision movement, pink or yellow gold-filled case (Federal Tax included) $55.00

THE PRECISION WATCH
Gruen Watches from $29.75 to $250; with precious stones to $4,000. The Gruen Watch Company, Time Hill, Cincinnati, Ohio, U.S.A. In Canada: Toronto, Ont.

GRUEN
THE PRECISION WATCH

BUY A GRUEN WATCH . . . BUT BUY A WAR BOND FIRST

"PRECISION," "THE PRECISION WATCH" AND "CURVEX" ARE THE REGISTERED TRADE MARKS OF THE GRUEN WATCH COMPANY.
†REG. U. S. PAT. OFFICE. PATENTED U. S. PATENT NOS. 1855952 RE. 20490, 2289930, AND 2194452. CANADIAN PATENT NO. 370997. COPYRIGHT 1944 BY THE GRUEN WATCH COMPANY

GRUEN . . . MAKERS OF THE PRECISION WATCH . . . AMERICA'S CHOICE SINCE 1874
COPYRIGHT 1944, THE GRUEN WATCH COMPANY

LUMBER, TIMBER PLYWOOD—PER M FT., B.M., CARLOAD LOTS F.O.B.

	SHORT LEAF YELLOW PINE AND DOUGLAS FIR — All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face) — All Fir planks No. 2 common, Fir timber is No. 1 common. Lengths up to 20 ft. (Prices in italics)									LONG LEAF Y. P. Merchantable grade up to 20 ft.		PLYWOOD Rail freight increment (See note for base price)	
	1x6 S4S	1x8 S4S	2x4 S4S	2x6 S4S	2x8 S4S	2x10 S4S	3x12 R&K	6x12 R&K	12x12 R&K	2x12 R&K	12x12 R&K	¼"	¾"
Atlanta	$40.00	$40.00	$32.00	$35.00	$34.00	$37.00	$46.00	.....	.....	$57.00	$64.00	$17.80	$21.85
Baltimore	44.00	46.00	44.00	46.00	47.00	52.00	65.00	.....	.....	115.00	120.00	18.25	22.25
	48.00	*49.00*	*55.00*	*55.00*	*55.00*	*57.50*	*68.00*	*$75.00*	*$75.00*	.....	.....	.....	.....
Birmingham	45.00	45.00	44.50	43.50	44.50	47.50	62.00	55.00	56.00	.....	.....	17.35	21.15
	50.00	50.00	49.50	48.50	49.50	52.50	72.00	.....	.....	67.50	70.00	.....	.....
Boston	60.00[3]	60.00[3]	60.00[3]	60.00[3]	60.00[3]	62.00[3]	66.00[3]	.....	.....	58.00[3]	58.00	18.25	22.25
	55.00	*55.00*	*54.00*	*54.00*	*54.00*	*54.00*	*58.00*	*58.00*	*58.00*	.....	.....	.....	.....
Chicago	54.00	54.00	55.00	54.00	54.00	60.00	68.00	.....	.....	80.00[l]	95.00[l]	14.60	17.80
	55.00	*55.00*	*54.00*	*54.00*	*54.00*	*55.00*	*56.00*	*56.00*	*57.00*	.....	.....	.....	.....
Cincinnati	47.50	49.00	42.50	42.50	42.50	44.50	67.00	.....	.....	65.00	65.00	17.35	21.15
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	42.50[k]	42.50[k]	52.50[k]	51.00[k]	65.00	65.00	83.00	83.00	83.00	.....	.....	17.75	21.60
Dallas[c]	45.25	45.25	44.50	43.00	43.00	47.25	60.75	58.75	58.75	88.75	85.00	14.60	17.80
Denver[‡]	63.50[4]	62.00[4]	65.00[4]	65.00[4]	65.00[4]	66.00[4]	69.00[4]	*83.00*	*89.00*	.....	.....	10.45	12.70
Detroit	61.00	61.00	57.75	57.75	57.75	63.75	71.00	70.75	90.00	70.75	90.00	17.35	21.15
	57.00	*57.00*	*57.00*	*57.00*	*62.75*	*72.75*	*75.00*	*75.00*	*90.00*	.....	.....	.....	.....
Kansas City[a]	69.00	69.00	67.00	65.50	67.00	69.00	84.00	.....	.....	84.00	94.00	12.60	15.40
	66.00	*66.00*	*59.50*	*59.50*	*59.50*	*59.50*	*75.00*	*80.00*	*80.00*	.....	.....	.....	.....
Los Angeles[a]	*60.00*	*60.00*	*60.50*	*60.75*	*59.25*	*59.25*	*72.75*	*72.00*	*72.00*	.....	.....	9.90[gh]	12.05[gh]
Minneapolis[‡b]	59.00[4]	59.00[4]	.....	.....	.....	.....	.....	.....	.....	.....	.....	12.60	15.40
[‡]	*58.00*	*58.00*	*57.00*	*57.25*	*56.25*	*57.00*	*64.75*	*65.50*	*65.50*	.....	.....	.....	.....
Montreal[‡†]	*58.00*	*61.00*	*54.00*	*58.00*	*60.00*	*66.00*	.....	.....	.....	200.00	200.00	.....	.....
	54.00	*54.00*	*57.00*	*57.00*	*57.00*	*58.75*	*62.00*	*62.00*	*62.00*	.....	.....	.....	.....
New Orleans	40.00	40.00	37.00	35.00	34.00	36.00	46.00	.....	.....	55.00	69.00	14.60	17.80
	31.00	*31.00*	*33.00*	*31.00*	*34.00*	*32.00*	*33.00*	.....	.....	.....	.....	.....	.....
New York	67.50	67.50	62.50	62.50	62.50	64.00	74.00	.....	.....	120.00[f]	125.00[f]	18.25	22.25
[‡]	.....	.....	*65.00[i]*	*65.00[i]*	*65.00[i]*	*65.00[i]*	[Range from $75 to $95]			.....	.....	.....	.....
Philadelphia	75.00	75.00	75.00	75.00	75.00	75.00	75.00	.....	.....	130.00	130.00	18.25	22.25
	75.00	*75.00*	*75.00*	*75.00*	*75.00*	*75.00*	*85.00*	*90.00*	*90.00*	.....	.....	.....	.....
Pittsburgh	50.80	53.20	62.75	55.00	60.85	62.50	76.25	.....	.....	.....	.....	18.10	22.05
	69.20	*68.10*	*66.10*	*65.80*	*65.20*	*65.65*	*88.75*	*88.75*	*88.75*	.....	.....	.....	.....
St. Louis[‡e]	61.00	61.00	57.00	56.00	57.00	59.00	69.00	*75.00*	*75.00*	87.00	87.00	14.60	17.80
San Francisco[d]	*41.00*	*41.00*	*36.50*	*36.75*	*35.75*	*35.75*	*37.50*	*36.00*	*36.00*	.....	.....	7.30[g]	8.90[g]
Seattle	*35.00*	*35.00*	*35.00*	*35.00*	*35.00*	*35.00*	*40.00*	*40.00*	*40.00*	.....	.....	0.00	0.00

Bold Face type, Southern Pine. *Italics, Douglas Fir.* [1] Long leaf. [2] Roofers, N. C. Pine. [3] Spruce. [4] Native. [5] Western Pine, No. 3 Common. [6] Spruce. [‡] Norway Pine. [‡] Delivered. *a* Yard prices. *b* Contractors discount in Minneapolis and St. Paul discontinued May 21, 1938. *c* 5M ft. or less. *d* F.o.b. cars San Francisco freight rate. *e* 10% discount taken off. *f* Up to 18 ft. † Plus sales tax.

Note: Special concrete form grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface, Seattle base price on ¼", $95.15; on ¾", $104.85; price includes oiling and sealing charges. For other centers add rail freight increment from table or proper size. For resin dipped treatment, add $10.50 per M. *g* Lower rate by water shipment. *h* 50,000 lb. minimum. *i* Ranges from $65 to $69. *j* Average price. *k* August 1943 price. *l* September price; none later available.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS — Discounts from jobbers list, Aug. 15, 1938 Single or Double Thickness		EXPLOSIVES — Per lb. 40% Ammonia Gelatin in 50-lb. cases delivered in 200 lb. lots*
	A quality	B quality	
Atlanta	75%	75%	$0.15
Baltimore	78%	79%	.15
Birmingham	76%	76%	.105
Boston	77%	78%	.15
Chicago	77%	77%	.15
Cincinnati	77–10%	77–10%	.15
Cleveland	77%	77%	.19
Dallas	76%	76%	.1625
Denver	76%	76%	.155*e*
Detroit	77%	77%	.1575
Kansas City	77–10%	77–10%	.155
Los Angeles	86%*d*	88%*d*	.1575
Minneapolis	77%	77%	.155
Montreal	40–5%*ab*	47%*ae*	.1675†
New Orleans	70%	75%	.16
New York	81%	82%	.22*f*
Philadelphia	78%	79%	.15
Pittsburgh	79%	79%	.1225
St. Louis	77–10%	77–10%	.155
San Francisco	66%	73%	.155
Seattle	75%	75%	.1575†

Price of 60% Ammonia Gelatin in $0.01 per lb. higher than 40%

a Discount from list Sept. 1939; sales tax included, but 6% tax exemption not allowed for. *b* Single thickness. *c* Double thickness. *d* Discount from jobbers' list Sept. 15, 1928.

* Urban prices influenced by service charges or local storage and delivery regulations, do not consistently reflect quantity prices in less congested areas. *e* F.o.b. Louviers, Colo. *f* In boroughs of Kings, Queens and Richmond, and in Manhattan south of Canal St. add delivery charge of $6.00 per trip. † F.o.b.

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.105	$0.13	$0.15
W. of Miss. to Rocky Mtn. States, Fla. and Maine.	.11 –.1175	.135 –.1475	.155 –.1675
Rocky Mtn. States	.11 –.1225	.135 –.1525‡	.155 –.1725‡
Pacific N. W. States	.1075–.12	.1375–.15	.1575–.17
Pacific S. W. States	.1050–.1125	.135–.1425	.155–.1625

‡ F.o.b. Louviers, Colo., or Butte, Mont.

PILES, TIES—F.O.B.

PILES

Prices per linear foot, fir and pine, bark on, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail — Pine*	By Rail — Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.34	....
12 in.— 2 ft. from butt	6-in.	50 to 59-ft.	.35	....
12-in.—2-ft. from butt	6-in.	60 to 69-ft.	.36	....
12-in.—2-ft. from butt	6-in.	90 to 100-ft.	....	.515
13-in.— 3-ft. from butt	5-in.	91 to 100-ft.	....	.5825
14-in.— 2-ft. from butt	6-in.	50 to 69-ft.	.41	.62
14-in.— 2-ft. from butt	6-in.	70 to 79-ft.	.43	.59
14-in.— 2-ft. from butt	5-in.	80 to 85-ft.	.53	....
14-in.— 2-ft. from butt	5-in.	85 to 89-ft.	.56	....
14-in.— 2-ft. from butt	5-in.	90 to 100-ft.	....	.61

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b., per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak	$1.50	....	$2.00	....
	Pine	2.00	$3.00*a*	2.50	$3.00*a*
New York	S. L. Sap Pine	1.43/1.54	2.59	1.76	2.86
	Mixed Oak	1.71	2.59	2.42	3.58
Birmingham	White Oak	1.00	1.60*a*	....	2.25*a*
Chicago	Red Oak	....	2.00/2.25*a*	....	2.87/3.00
Los Angeles	Douglas Fir	2.00	3.25*a*	2.90	4.70*a*
Philadelphia	Red Oak	....	2.10*ag*	....	3.25*ag*
St. Louis	White Oak	1.63	....	2.19	....
	Red Oak	1.63	2.20*a*	2.19	3.04*a*
	Sap Pine or Cypress	1.70	....	2.06	....
San Francisco	Douglas Fir	1.25*bef*	....	....	3.00*ef*
Montreal	Birch or Maple	.85	.95	....†	....†

Tr.— Treated; Untr.— Untreated. *a* Creosoted. *b* 6"x8"x8'6". *c* Empty cell. *d* Zinc. *e* Green. *f* F.o.b. cars. † Out of market. *g* January 1943 price; none later available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder, in drums, f.o.b. works, per 100-lb.	$2.50– 2.70
Chlorine cylinders, liquid, per lb., delivered	.0525
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, del'd, ton	18.50–35.00
Silicate of soda, 52 deg. in drums, f.o.b. works, per 100 lb.	1.40
Soda ash, 58%, in paper bags, per 100 lb. dense	1.15
Sulphate of aluminum, commercial, in 100-lb. bags, per ton	23.00–25.00
Sulphate of copper, in bbl., per 100-lb.	5.00

CUT DOWN OVERHAULS

—SAVE ENGINE CLEANINGS!

THAT'S HOW SOCONY-VACUUM'S DELVAC OILS HELP KEEP ENGINES ON THE JOB! These special oils are recommended for all automotive-type Diesels and heavy-duty gasoline engines. Have high resistance to formation of sludge and lacquer. They guard against corrosion of hard-alloy bearings. Save manpower, "out-of-service" time! GET DELVAC OILS for your equipment!

OTHER SOCONY-VACUUM TIME-SAVERS:

MOBILUBE "V"—A special short fiber, soda soap grease developed primarily for wheel bearings and grease-type universal joints, but also recommended for clutch release bearings and other parts operating at high temperatures. Remarkably efficient and long-lasting. Recommended for year-around use.

MOBILUBE GEAR OILS—These highly stable, straight mineral oils are made specially for heavy-duty service. They are free of abrasives, soaps, fillers, foreign materials of any kind—will not thicken excessively when cold. Offer superior protection against "scuffing," "galling"—dangerous gear wear!

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KEEP ENGINES "ON SCHEDULE" WITH SOCONY-VACUUM'S FAMOUS

DELVAC *Heavy-Duty* OILS

SOCONY-VACUUM OIL CO., INC., and Affiliates: Magnolia Petroleum Co., General Petroleum Corp. of Calif.

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE — PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity, Common backing	Straight hard	LIME Per ton, Hydrated finishing	In paper, Common hydrated	Carload lot, Pulverized, or lump
Atlanta	$104.00	$114.00	$199.00	$234.00	$244.00	$250.00	$15.00	$18.04	$26.54	$15.04	$15.04
Baltimore	84.00	90.00	170.00	200.00	260.00	300.00	16.00*k*	20.00*k*	18.00	13.00	2.50*m*
Birmingham	80.00	85.00	160.00	191.00	252.00	288.00	14.50	17.00	18.11	13.64	2.25*o*
Boston	103.75*a*	110.65*a*	207.45*a*	248.90	.....	.....	20.00*i*	20.00*i*	21.00†	.....	16.00
Chicago	72.00	77.00	145.00	197.00	243.00	278.00	15.00	16.00	17.00	15.00	12.50
Cincinnati	65.55	69.90	131.20	148.70	210.35	240.45	22.00	22.00	15.50	13.00	.....
Cleveland	71.25	76.20	125.50	150.60	201.90	231.15	20.00	20.00	15.75*j*	13.25*j*	3.50*o*
Dallas	62.50	67.50	135.00	162.00	212.50	263.00	13.50*i*	15.00*i*	19.00	15.00	15.00
Denver	84.80	95.40	153.70	178.20	212.00	227.90	14.50	18.00	25.00*j*	17.00*j*	20.00*j*
Detroit	92.70	96.70	181.20	206.75	267.50	306.00	20.75	20.75	18.00	16.00	16.00
Kansas City	67.00	69.00	89.00*c*	128.00	163.00	189.00	16.50	18.50	19.32	13.00	10.9
Los Angeles	73.50†*r*	89.50†*r*	128.00*c*†*r*	210.00†*r*	368.00†*r*	460.00†*r*	13.50	15.00	16.50	17.50	17.50
Minneapolis	87.00*b*	92.80*b*	157.30*b*	.....	189.00*b*	262.00*b*	20.50	21.50*g*	21.00	16.00	19.00
Montreal	94.55*a*	100.45*a*	199.50*a*	160.45*a*	109.40*at*	137.40*av*	21.08†*u*	28.35†*u*	24.60*u*	18.00*u*	.....
New Orleans	72.00	72.00	135.00	162.00	210.00	260.00	14.00	.....	18.30	12.08	14.10
New York	78.40	83.60	115.00*c*	193.30*h*	238.80*h*	295.60*h*	17.50/18.50	.....	20.00	14.00	17.00
Philadelphia	85.30	91.00	170.50	204.60	252.00	312.00	17.00	20.00	19.00	16.00	18.00
Pittsburgh	72.85	78.55	147.25	163.75	217.50	231.00	20.50	22.50	17.90	15.40	2.55*m*
St. Louis	67.00	95.00	130.00	190.00	244.00	290.00†	18.00	17.00	22.00	18.00	2.50*m*
San Francisco	96.00	108.00	144.00	108.00‡	.....	.....	21.50	.....	24.00	23.00	2.50*m*
Seattle	115.00	125.00	230.00	.....	.....	.....	20.50*f*	24.00*f*	20.00*s*	20.00*s*	20.00*s*

† F.o.b. *a* Smooth. *b* Carload lots delivered to job. *c* 6x12x12 in. *d* Not load bearing. *e* 48 lb. tile. *f* Less $1.00, ½ cash 15 days, balance 30 days *g* Selected common. *h* F.o.b. Perth Amboy, N. J. *i* F.o.b. Warehouse only. *j* LCL. *k* $1.00 discount if paid in 10 days. *l* Lump. *m* Per bbl., 180 lb. *o* Per bbl., 200 lb. *p* 280 lb. bag. *r* 5% discount 10 days. *s* 2% discount for cash. *t* 5½x8x12. *u* 8% sales tax included. *v* 6x12x12-in. *w* Per 220 lb. bag. *x* Sept. 1944 prices, Oct. not available on tile,

PAINT, ROOFING—F.O.B. CARLOAD LOTS

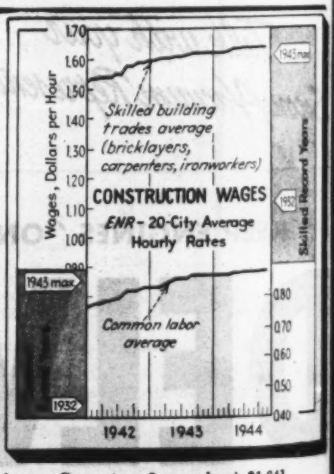
	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry *a*	WHITE LEAD Per 100 lb in oil	READY-MIXED PAINT Per gal., drums Graphite *b*	Aluminum *b*	Ferric Oxide *d*	ROOFING SUPPLIES Carload lots f.o.b factory— Rolls, slate surfaced, 85–90 lb per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 350 lb. bbl. per ton
Atlanta	$10.25	$14.125	$1.30	$2.25	$1.20	$1.90	$1.61	$1.61	$0.27	$29.00
Baltimore	10.00	13.75	2.00	3.00	2.50	2.30	2.70	2.70	.40	29.00
Birmingham	10.25	14.125	2.35	3.50*r*	1.98*r*	2.10	2.03	2.03	.32	28.35
Boston	10.00	13.75	1.75	2.50	2.31	2.00‡*h*	3.30‡*u*x	3.30‡*u*x	.25‡	21.00‡
Chicago	10.00	13.75	....	....	....	1.75*h*/*f*	1.74*h*/*f*	1.82*h*/*f*	.33*f*	23.00*f*
Cincinnati	10.00	13.75	1.70	2.90	1.60	2.20	2.10*h*	2.10*h*	.33	25.00
Cleveland	10.00	13.75	1.70	2.90	1.60	1.93	1.83*h*	1.83*h*	.25	27.00
Dallas	10.00	14.50	1.88	2.11*n*	.05*l*	1.75*h*	1.66*h*	1.66*h*	.35	39.00
Denver	10.50	14.25	....	....	.27*l*	2.45	2.95	2.95	.35	28.00
Detroit	10.00	13.75	1.75	3.00	1.60	2.25	2.25	2.25	.50	23.00
Kansas City	10.00	13.875	2.30*g*	2.55*gr*	2.16*g*	2.10	2.30	2.30	.28	27.50
Los Angeles	10.25	14.25	1.60	2.25	2.30	2.10	1.50	....	.45	.....
Minneapolis	10.00	13.875	....	....	....	1.8025*i*	1.7098*h*i	1.7098*h*i	.32	23.00
Montreal	9.25	6.25	2.50*p*	4.90*p*	3.15*p*	4.02*t*	2.58*t*	3.01*t*	.89*t*	2.10*t*
New York	10.00	13.75	2.03	....*r*	1.82	1.7098	1.6273*h*	1.6273*h*	.26	25.00
Philadelphia	10.00	13.75	1.60/1.80	2.20*r*	1.55	1.75	1.66	1.66	.32	23.00
Pittsburgh	10.00	13.75	1.05	1.95	.80	1.95	1.84*h*	1.84*h*	.34	26.00
St. Louis	10.00	13.75	2.28*s*	2.89*s*	1.96*s*	1.70	1.70	1.70	.37	24.00
San Francisco	10.25	14.00	1.80	2.75*n*	1.35	1.71	2.40	2.40	.33	20.50
Seattle	10.25	14.25	1.90	3.00	....	2.15	2.16*h*	....	.35	26.50*j*

‡ Delivered. Note: Red lead in oil 50c. higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 3-49A. *c* ASTM Spec. D266-31. *d* 80% minimum ferric oxide. *e* Subject to 25% discount. *f* Distributors' price to contractors. *g* 5 gal. can. *h* Per roll, 65 lb. *i* Minneapolis and vicinity. *j* Asphalt pitch. *k* Per 100 lb. *l* Per lb. *m* Per bbl. *n* May, 1941 price, no later quotation available. *p* Plus 8% sales tax. *r* Not available, except on priority rating; then quoted specially. *s* December, 1942 price. *t* Federal tax included. *u* 90-lb. roll. *v* Truck delivery.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Brick-layers	Car-penters	Struct. Iron Workers	Hoisting Engineers	Plas-terers	Common Labor— Building	Common Labor— Heavy Const.
Atlanta	$1.50	$1.25	$1.50	$1.25	$1.50	$0.40	$0.50
Baltimore	1.75	1.4375	1.80	1.625/2.00	1.50	.75	.75
Birmingham	1.75	1.25	1.50	1.25/1.50	1.50	.65	.65
Boston	1.625	1.50	1.65*	1.50/1.875	1.667	1.00	1.00
Chicago	1.75	1.70	1.76	1.75	1.825	1.10	1.10
Cincinnati	1.875	1.50	1.675	1.45/1.60	1.625	.85	.85
Cleveland	1.875*c*	1.575	1.875	1.875	1.875	1.085	1.15/1.25
Dallas	1.625	1.25	1.50	1.75	1.625	.60	.75/1.25
Denver	1.65*b*	1.50*b*	1.50*b*	1.50/1.625*b*	1.50*b*/*f*	.80*b*	.80*b*
Detroit	1.725	1.50	1.825	1.675/1.75	1.725	90/100	.90
Kansas City	1.65	1.50	1.625	1.625	1.65	.90	.90
Los Angeles	1.50	1.35	1.625	1.375	1.667	.875	.875
Minneapolis	1.625	1.44	1.625	1.50	1.625*e*	.95	.95
New Orleans	1.50	1.25	1.50	1.50	1.375	.65	.75
New York	2.00*b*	1.85*b*	2.00	2.00*b*	2.00*b*	1.10*f*	.95
Philadelphia	2.00	1.58	2.00	2.00	2.00	.825	.825
Pittsburgh	1.90	1.75	1.75	1.8125	1.875	.90	.80
St. Louis	1.75	1.50	1.75	2.00	1.75	1.00	1.00
San Francisco	1.875	1.50	1.75	1.50/1.75	1.75	1.00	1.00
Seattle	1.845	1.565	1.745	2.00	1 8.5	1.145	1.10
Montreal*	1.05	.95	1.00	.90	1.05	.60	.65

b 7 hr. day. *c* Prevailing rate on government work. *e* 35 hr. wk.
* Cost of living bonus now included in basic wage.



ENR Skilled Average; (Bricklayers, Carpenters, Ironworkers) $1.641.
ENR Common Average; $0.886.

In the hedgerows of Normandy

A "NEW" WEAPON WAS BORN!

Signal Corps Photo

ANOTHER LAPLANT-CHOATE CONTRIBUTION TO VICTORY

For a time the going was plenty tough in Normandy. Just as Hitler had figured, the ageless hedgerows stopped Allied tanks cold, preventing any major advance from the beachhead. Then all of a sudden, American forces unleashed one of the most potent "secret" weapons of the entire war—a powerful Tank-Dozer—developed and built by LaPlant-Choate—in cooperation with Army Engineers and Ordnance.

Consisting of a rugged dozer blade ingeniously mounted on an M-4 tank, this modern juggernaut combines the best features of both machines—the terrific work-power of the bulldozer, plus the fire-power, speed and armored protection of the medium Sherman tank. An almost unstoppable combination!

Spearheading the attack in France, swarms of American Tank-Dozers knifed through the hedgerows and "bocage" country like papier mache—plowing out land mines . . . destroying enemy pill boxes . . . bulldozing their way through or over every obstacle the Nazis could muster. Next stop: "Berlin and Tokyo!"

As one of the nation's oldest and largest manufacturers of earthmoving equipment, it has been LaPlant-Choate's privilege to work closely with the Army in developing and producing many important items of engineer-equipment. Included in this list are thousands of fighting bulldozers . . . small air-borne dozers and scrapers . . . special beach-dozers for invasion beaches and tree-dozers for clearing heavy jungles. All are weapons of war today but soon we hope many will become tools of peace. LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa.

LAPLANT-CHOATE

Earthmoving and Land Clearing Equipment

News of the Week

(*Continued from page* 59)

Percentage of private construction increases

Though total new construction in the United States the first nine months of 1944 was less than half the 1943 figure, that which was privately financed was nearly equal in dollar value to private work done in 1943, War Production Board figures show. In the first nine months of 1944, all construction amounted to $2,905,000,000, of which $1,127,000,000 was for private work.

The percentage of privately financed work for the nine months total in 1944 is twice the percentage for the same period in 1943. Publicly financed activities declined 66 percent, those privately financed declined five percent.

Steepest declines were in military construction and government-financed factory construction, which decreased by 73 and 70 percent respectively from the 1943 figures. Private factory construction was but 26 percent under the 1943 figure. A 44 percent drop in residential building included both public and private work. All other non-military work decreased 20 percent.

More lumber available to civilian users

Hardwoods and certain other lumber now needed in smaller quantities by the military are being made generally available to the public without certified or rated orders, the War Production Board announces.

This liberalizing of lumber distribution, WPB says, is possible because the claimant agencies have not been able to use the full amounts of lumber which had been requested by them and authorized by the WPB in the third and fourth quarters.

Construction contractors are now permitted to receive uncertified or unrated lumber direct from the producers, instead of being compelled to buy it from the distributor. Military orders, however, will continue to be given precedence over all others except those rated AAA, up to a specified percentage of the military's anticipated needs. These percentages remain unchanged except for redwood, for which only 40% instead of the former 60% will now be reserved.

Proposed pipeline called likely pollution hazard

A legal dispute has arisen between the city of Lawrence, Mass., and the Colonial Beacon Oil Co., which proposes to maintain a 4-in. pipeline in the bed of the Merrimac River upstream from Lawrence. The proposed pipeline would run between Everett, a suburb of Boston, and Methuen, crossing the river at Andover.

Lawrence and Methuen officials are opposed to the line on the ground that it will prove hazardous to the water supply systems of those places. A public hearing was held Oct. 17 before the state Public Works Commission in Boston. Mayor James F. Meehan of Lawrence, together with other officials, cited the danger to the water supply for more than 100,000 people when breaks might allow oil to seep into the river.

Metcalf & Eddy, Boston consulting engineers, contended that the proposed oil pipeline would constitute no hazard to the Lawrence water supply. The matter has been taken under advisement by the commission.

The Rud-o-Matic Combination Magnet Reel and Tagline is a radical departure from the usual reel, something which is brand new and which no one else can offer. It is operated on a string principle for tension. Tagline cable is attached to magnet with sufficient tension to steady, then electric cable is fastened to connections on magnet, leaving same a little slack. As both drums revolve together, electric cable always maintains the degree of slackness originally set. This feature eliminates any possibility of electric cable being pulled apart or jerked loose from the connections, thus insuring a long life for it. Most of the crane manufacturers have adopted Rud-o-Matics as standard equipment.

McCAFFREY-RUDDOCK TAGLINE CORP.

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TRACTOR & MCHRY. CO. Atlanta, Ga. · A. H. COX & CO. Seattle · FORSYTHE EQUIP. CO. Long Island City, N. Y. · COMLEY EQUIP. CO. Philadelphia, Pa. · W. E. PHILLIPS Detroit, Mich. · L. L. HANSON Chicago, Ill. · OWEN BUCKET CO., LTD. Berkeley, Calif.

Our landing craft, which have put hordes of fighting men and machines on enemy shores with incredible speed, have impressed the world with their efficiency.

Impressive too, is the efficiency with which Owen Buckets operate—taking capacity grabs of materials quickly—discharging them speedily—handling great yardage at low cost.

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ECONOMY MUST BECOME THE NATIONAL WATCHWORD

WOOD ROADMIXER CAN SAVE AS MUCH AS TWO-THIRDS IN CONSTRUCTION COSTS

ON THESE JOBS

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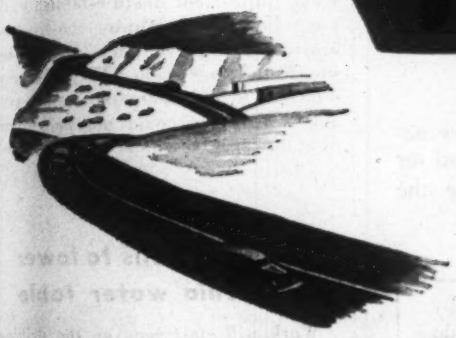
- AIRPORTS



WITH THESE MIXES

- EMULSIONS
- ROAD OILS
- SOIL CEMENT

The Wood Roadmixer is a complete traveling mixing plant. It is pulled and powered by a standard crawler tractor and tows a binder supply truck. It uses low-cost native or local materials. It mixes in *one pass on the job.* Two men can handle an entire Wood Roadmixer unit and produce an average of 2,000 tons of mix per 8-hour day.

... These are the "built-in" features of a Wood Roadmixer. Combine these with a little common sense in design, preparation and finish and you have the answer to economical, low-cost, high quality pavement construction.

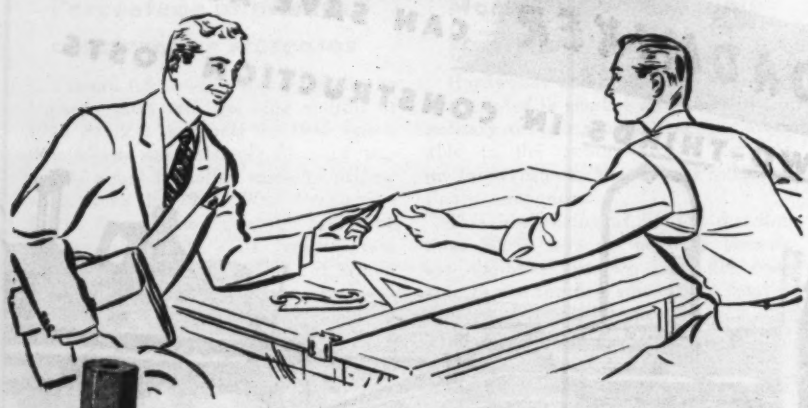
Wood Roadmixers will lay two miles of pavement for the cost of *one*—will make *one* dollar do the work of *two.* And that's important to you as an engineer, contractor or taxpayer. Because the day is coming when *economy must become the national watchword!*

Wood Roadmixers are built in two sizes. They are sold by leading equipment dealers everywhere. If there isn't a dealer in your territory, write us for literature and costs on the Wood Roadmixer—the pioneer and leading travel plant method of pavement construction.

WOOD ROADMIXER

Wood Manufacturing Co. • 816 West 5th St., Los Angeles 13, California

IF YOU THINK IT'S ONLY SALES TALK...



Try an Eldorado pencil at your drafting board! The proof is in the using—and an Eldorado gives you superlative proof of

uniform, accurate grading
smooth responsiveness
strength under pressure
flawless, opaque lines

If you are not using an Eldorado—make the acquaintance of America's finest drawing pencil. Send for a Comparison Sample by filling out and mailing the coupon below.

With the pencil, we'll also send a complimentary copy of "I Shall Arise"—a portfolio of Typhonite Eldorado pencil reproductions by Samuel Chamberlain. The subjects are buildings of artistic and historical importance bombed by the Nazi Luftwaffe early in the war. The portfolio is most appropriate at this time as a magnificent memento of the culture and the courage of the countries now rising again as the Allied Nations liberate them, one by one.

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Pencil Sales Department 227-J 11

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Gentlemen:

Please send me a Comparison Sample of Typhonite Eldorado drawing pencil in . . . degree. Also the Portfolio of drawings, "I Shall Arise".

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Road work wage rates are set for Michigan

Recently the Wage Adjustment Board of the U. S. Department of Labor authorized a new scale of hourly wages to apply on all highway construction work in Michigan, effective for the first full pay roll period after Oct. 4.

The state is divided into three zones, —(1) the metropolitan Detroit area, (2) the rest of southern Michigan as far north as Saginaw Bay and (3) the rest of the state. The rates vary in some instances in the different zones. There are of course several classifications of skilled and unskilled workers.

Rates range from 70c. per hr. for labor in the upper counties to $1.825 per hr. for crane operators and structural steel workers. Rates vary 25 percent or more among the three zones, the large variations being in the unskilled labor grades. Wage rates fixed are in line generally with existing rates but some are substantially lower than rates paid in 1942.

Charles M. Ziegler, state highway commissioner, had requested that the Wage Adjustment Board establish legal wage limits for highway construction projects so that contractors might be sure of the wage scale. They had been reluctant to bid under the former system, when they could not be certain what the legal maximum wage might be.

. . .

Drainage wells to lower California water table

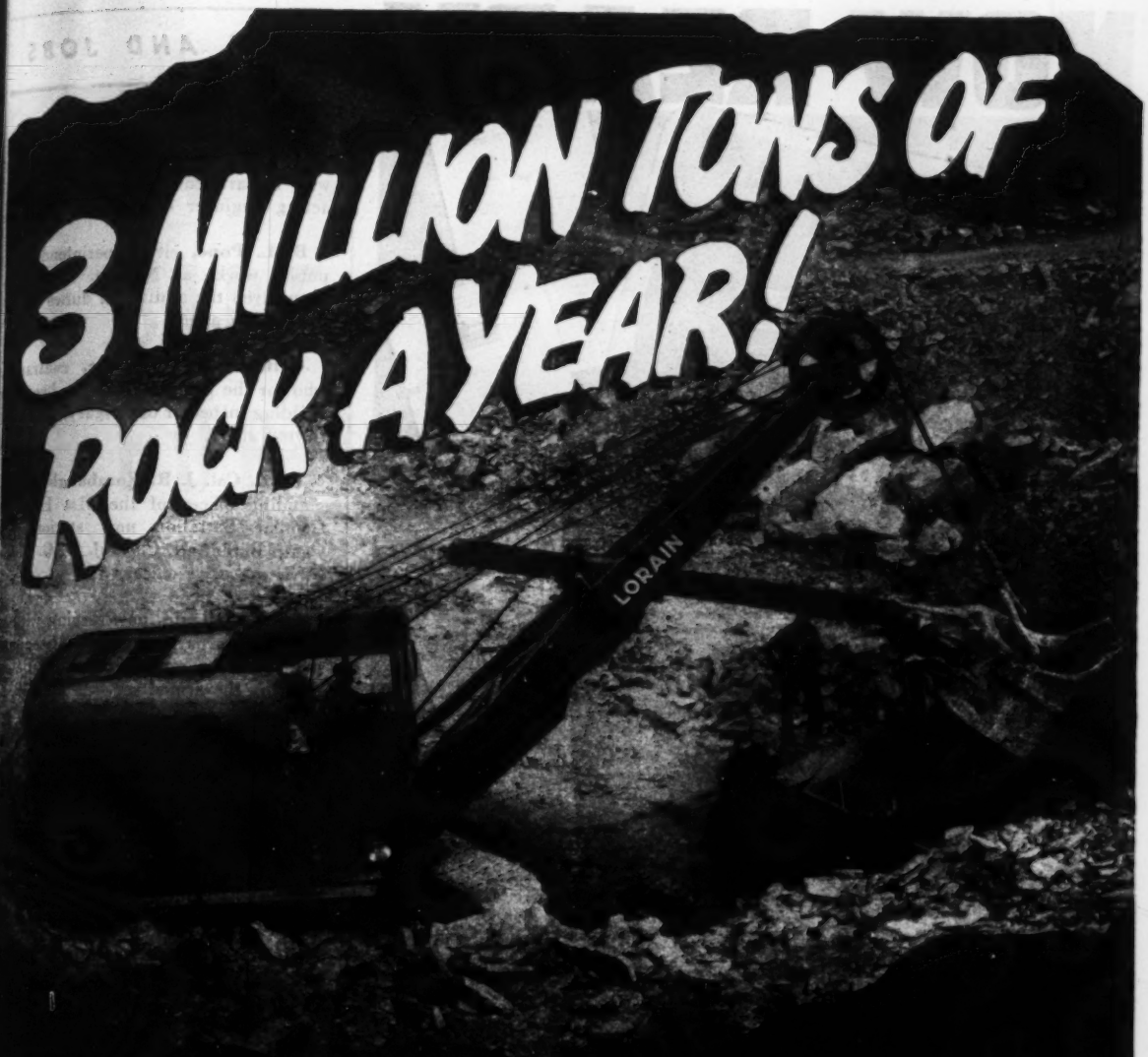
Work will start soon on the drilling of seven wells to alleviate high water tables in the San Fernando Valley in California.

This was announced recently by Louis O. Turner, valley district engineer, who pointed out the project will climax an intensive 18-month study of the trouble which recently has reached alarming proportions in the North Hollywood-Burbank areas, where basements, cesspools and even surface areas have been flooded.

Drainage wells are thought to be the most economical and feasible means of lowering the ground water levels, as the result of a survey conducted by federal, state and city engineers.

The primary cause of the rising water table was said by H. A. Van Norman, advisory engineer of the Los Angeles Department of Water and Power, to be wet cycles resulting from rainfall conditions. He expressed the opinion that the battery of pumps in use across the valley would have to be in operation for a prohibitive period of time to have any effect on the easterly areas.

3 MILLION TONS OF ROCK A YEAR!



Job-Tested Proof that Lorains Are Money-Makers in Rock . . .

A 3,000,000 ton payload of crushed rock in a single year. That's the story of Lorain performance and production on this quarrying operation* where each of five 2 yd. Lorain 82's averaged over 50,000 tons of rock a month for twelve consecutive months.

A steady rock diet like this means plenty of power—and *Lorains are long on power* which is applied through: (1) The Center Drive design which permits ganging-up full engine power on any one operation; (2) the Hydraulic Clutch that cushions impacts and shocks, absorbs stresses and strains, prevents engine stall and protects cable life.

Keep the 2 yd. Lorain 82 (with hydraulic clutch) in mind for those jobs where big production means bigger profits. For complete details get in touch with your Lorain distributor, now!

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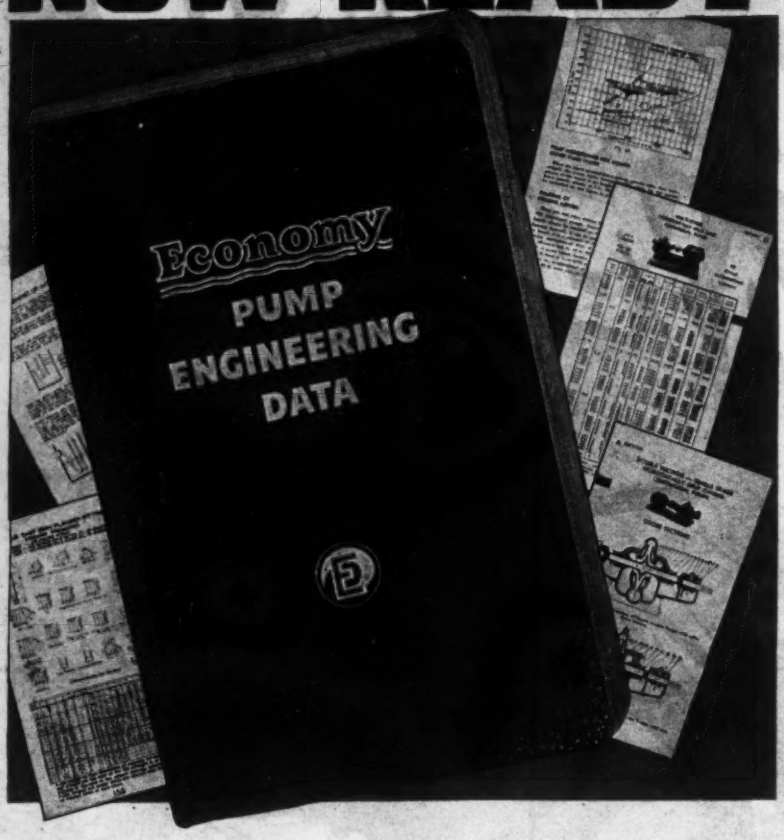

GIVES YOU THE ANSWERS TO PUMP-ENGINEERING PROBLEMS

A timely contribution to the pump industry—350 pages of 1945 data just when vital postwar problems require authentic facts, sound experience and advanced engineering practice.

Here, under one cover, are hundreds of handy tables and diagrams you need every day. Revised, improved and new data governing the correct layout and installation of sewage, drainage, processing, heating systems, etc. Describes clearly and exactly the way to do the job right.

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ECONOMY PUMPS, INC.

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MEN AND JOBS

F. Spencer Weber, chief bridge draftsman for the Michigan State Highway Department, has been appointed acting engineer of bridge design.

B. L. Pope, city superintendent of public works at Newton, N. C., has been given the additional duties of city purchasing agent.

Cuthbert T. Valentine, contractor, who for the past 15 years has been city building inspector of Calgary, Alta., has retired at 69.

Lieut. Col. J. R. Rorabaugh is commanding officer of the 31st Engineer Combat Battalion now stationed at Camp Butner, N. C. **Maj. D. C. Shawlin** is executive officer.

Paul S. Adamo, now serving with an engineer corps in Iran, has been promoted to the rank of captain. Before entering the armed services in 1942, he served as assistant engineer in the division of highways, Illinois Department of Public Works and Buildings, Springfield, having worked with the department ten years.

C. S. Seabrook has been appointed planning engineer for the public works department at Tacoma, Wash.

Roy Stewart has been appointed assistant city engineer at Great Falls, Mont. For the last two years he had been in the Great Falls area office of the Seattle District, U. S. Army Engineers, serving in a civilian capacity.

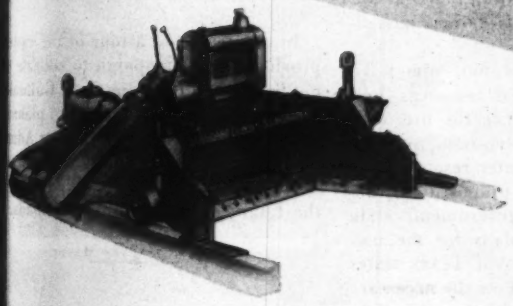
Elmer J. Freethy and **Stanley Kimball** have announced their association in the firm of Freethy-Kimball Co., to conduct a general contracting and industrial engineering business, at San Francisco and El Cerrito, Calif.

John R. Banning, Denver city highway commissioner since 1935, has resigned to accept a post as advisory consultant with The Asphalt Institute.

Col. John C. Monahan, Springfield, Ill., has been promoted from lieutenant colonel. He is stationed in England. A former highway engineer in the state's District 6 office, Monahan entered the service in March, 1940.

H. Dale Bossert of Kansas City has been appointed director of planning for the Illinois Postwar Planning Commission to succeed Dr. Louis Wirth.

CUTS SIDE FORM REQUIREMENTS 33%



ith a STANDARD-LEWIS Subgrader, you place just ough forms ahead of the paver for a day's run. At eat speed and with no clean-up or follow-up work the bgrade is accurately and completely prepared in cord time. Forms pulled from finished slabs are placed r the next day's run. A simple, economical procedure t has effected savings of 33% in side form require- nts on scores of jobs. Get the whole story of the STANDARD-LEWIS Subgrader. Send now for the new 8-page bulletin. Complete details covering all of the features (many patented) are given.

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• **COMPARE** the time to perform any calculation of your figure work . . . from start of figure-entry to clearance of dials ready for next problem. Do not be misled by "comparisons" that relate only to part of a calculation.

• **COMPARE** the number of hand-to-key movements and amount of hand-travel.

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• **COMPARE** provisions for re-check of entries after answer is complete . . . a safety factor assuring correct calculations, always.

• **COMPARE** means for detection and correction of improperly set figures, during or after their entry.

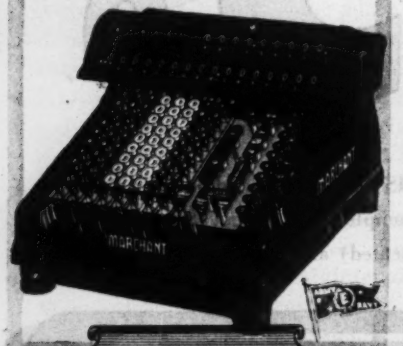
• **COMPARE** simplicity and all-round ease of operation.

• **COMPARE** cost of upkeep . . . promptness and quality of repair service.

• And make these comparisons on *latest* models . . . it is never to your best interest to compare an *old* model of one make with a *new* model of some other.

WPB Order L-54-c does not permit trials of new calculators outside of manufacturers' agency-offices. Get in touch with our nearest Agency to be brought up to date on "what's new in Marchant calculators."

Deliveries according to WPB schedule.



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THIRTY-FOURTH YEAR

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Elections and Activities

D. B. Jett of Las Cruces, N. M., recently was re-elected to the chairmanship of the New Mexico Board of Registration of Professional Engineers and Land Surveyors. Earl M. Conwell of Albuquerque was named to serve another term as vice chairman. Tom McClure, state engineer, is sectary.

Highways Minister J. D. McKenzie of Nova Scotia has been elected president of the Canadian Good Roads Association.

George A. McNamee of Montreal was re-elected secretary-treasurer and Theodore G. Morgan was chosen chairman of the executive committee.

On Oct. 2, the Texas Water Conservation Association was organized at Austin, Tex. The association is made up of representative members of all Texas flood control, water conservation and reclamation organizations.

Guy H. Jackson, Anahuac, was chosen president and J. E. Sturrock, Austin, temporary secretary. The association also appointed a board of 35 directors to look after five different interests with seven directors assigned to care for each of the following: River authorities, municipal, irrigation, navigation, and industrial.

The association has four aims: To publicize Texas water resources and development; to advance the use, control, protection, conservation, and development of Texas water resources; to aid in harmonizing proposed private projects and local government, state and federal agency plans for the use, control and protection of Texas water resources; and to promote the necessary state and federal legislation to carry out the association's aims.

W. P. Baker, Raleigh, has been elected president of the Carolinas Roofing and Sheet Metal Contractors Association. Members of the executive board are: V. D. Ramseur, Greenville, S. C.; L. K. Flynt, Charlotte, N. C.; W. T. Fort, Sumter, S. C.; Horace T. King, Wilmington, N. C.; J. A. Piper, Greenville, S. C.; Hilton Bowles, Hickory, N. C.; George Averette, Charlotte, N. C.; and J. V. King, Sanford, N. C.

D. McG. Williams, superintendent of the Durham, N. C., water department, is serving as acting secretary-treasurer of the North Carolina section of the American Water Works Association and the North Carolina Sewage Works Association in the absence of R. S. Phillips of Durham, now in the armed services.

City Manager R. M. Cooksey of Thomasville, N. C., has been elected second vice president of the North Carolina League of Municipalities, and City Manager A. C. Nichols, Wilmington, City Manager H. L. Burdette, Kings Mountain, and Commissioner of Public Works Roy L. Williamson of Raleigh have been named district directors. Other officers are: Walker Lylerly, Hickory, president; Henry T. Powell, Henderson, first vice president; and W. [illegible] Sullivan, Greensboro, third vice president. Lylerly succeeds Earl N. Horne of Burlington.

Other district directors include: [illegible] M. Griggs, Elizabeth City, D. B. Willis, Morehead City, George W. Davis, Farmville, P. M. Covington, Red Springs, H. H. Baxter, Charlotte, George W. Coan, Jr., Winston-Salem, Earl H. Tate, Lenoir, and A. V. Edwards, Hendersonville.

Included in the legislative program of the league is a proposal calling for the allocation of one cent per gallon of the state-collected gasoline tax to cities and towns for use in the construction and maintenance of roads.

In the course of a tour of the eastern provinces in a campaign to educate the public in town planning, J. S. Galbraith, chairman of the community planning division of the National Housing Administration, Ottawa, Ont., recently addressed the St. John, N. B., branch of the Engineering Institute of Canada.

A new Lidice, to be built in Czechoslovakia after the war, is being designed at Columbia University under the auspices of the Czechoslovakian government in exile. The rebuilding of the German-destroyed community was authorized by Joseph J. Kalenda, head of the Department of Public Works of the Czechoslovakian Ministry of Agriculture, now in this country. The design will utilize the most modern architectural developments being taught at Columbia where plans for the reconstruction of two Greek cities were recently designed. Mr. Kalenda, a native of Prague, has been in London, where, since the fall of Czechoslovakia, he has been active with the Inter-Allied Committee for Physical Planning and Reconstruction and the United Nations Works and Building Committee.

OR UNCLE SAM'S

War Birds in Alaska

TELSMITH

rtable Crushing-Screening Plants

★ Uncle Sam never leaves his war birds out on a limb — his planes must have bases—flying fields with runways, taxi strips and aprons.

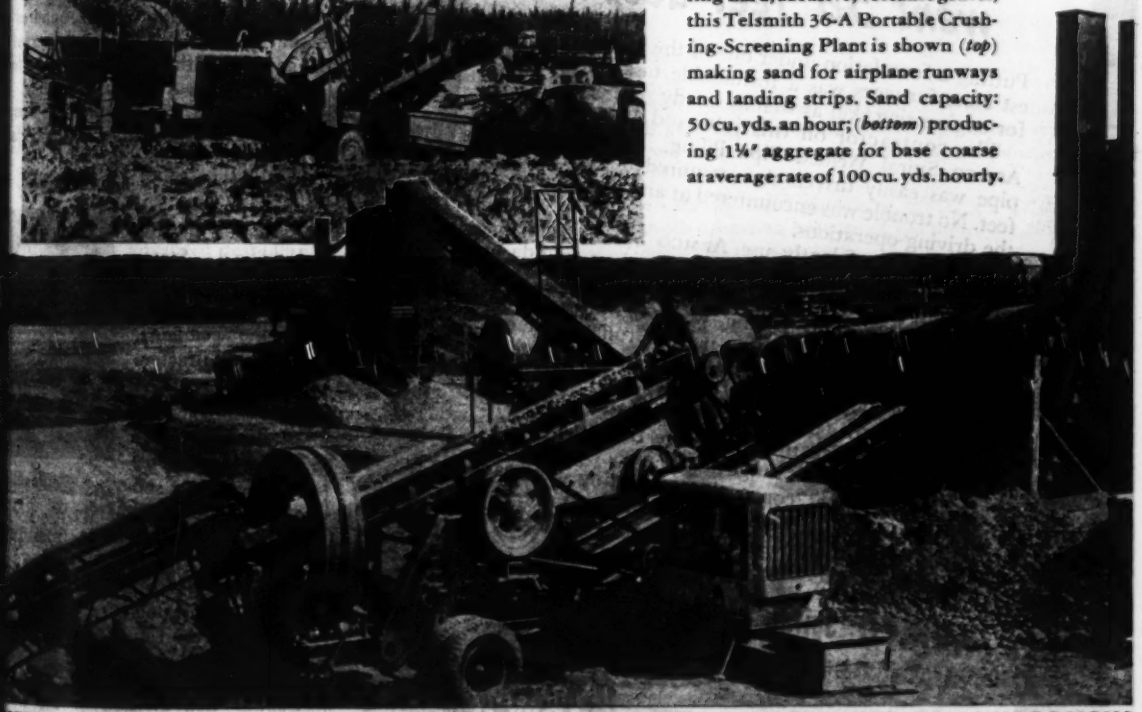
They're being built — not only in Alaska — but in all parts of the world. And much of the equipment that produces the aggregate for them is Telsmith built. And Telsmith knows how to build it. That's Telsmith's regular business, and has been *for years.*

Look at this Telsmith 36-A Portable Crushing-Screening Plant shown here in active service—helping to build flying fields for Uncle Sam's war birds in Alaska. You'd know the contractors, if we could mention the name.

It can be told, however, that this portable, like all Telsmith plants, is doing a consistently good job and doing it fast.

Although almost all current production of Telsmith Portable Plants, Telsmith Crushers and other equipment are going to Uncle Sam for use by the armed forces overseas—Telsmith Equipment is available for contractors doing war work. *Write for Bulletin 2.*

P-6



SOMEWHERE IN ALASKA — Handling hard, abrasive, volcanic gravel, this Telsmith 36-A Portable Crushing-Screening Plant is shown (*top*) making sand for airplane runways and landing strips. Sand capacity: 50 cu. yds. an hour; (*bottom*) producing 1¼" aggregate for base coarse at average rate of 100 cu. yds. hourly.

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this "Bed" for a blast furnace
went 58 feet deep!
Putting a foundation under one of the world's largest blast furnaces was a formidable task. It called for engineering skill as well as sturdy supports.
The contractor on this job used 12¾" O.D. ARMCO Spiral Welded Pipe Piling. This versatile pipe was easily driven to a required depth of 58 feet. No trouble was encountered at any time during the driving operations.
You can confidently use ARMCO Spiral Welded pipe piling and caissons on your toughest foundation jobs. "Spiral Welded" has often demonstrated its strength, straight driving, water-tightness and a uniformity of diameter that permits full salvage of cut-offs. These advantages save time and money.
By using ARMCO Spiral Welded you can order any specified length (not random) that can be handled and shipped. Wall thicknesses are from 3/16 to ½-inch and diameters range to 36 inches. When required, end plates, cone points or cutting shoes can be mill attached. Quotations on request. Write The American Rolling Mill Company, Pipe Sales Division, 2301 Curtis Street, Middletown, Ohio.
ARMCO Spiral Welded Foundation Piles
EXPORT: THE ARMCO INTERNATIONAL CORPORATION
ARMCO

Manufacturers' Activities

Ground has been broken by the E man Kodak Co. at Rochester, N. Y., construction of a reinforced conc building of four stories, to be loc on the former site of St. Patri Cathedral, Platt Street and Plym Avenue. Dimensions will be 135 235 ft., with tile and brick exterior interior. To be used for general tory work, it will be one of the m important buildings of the Ca Works branch of the company. J B. Pike & Son Inc., Rochester, is general contractor.

CHARLES ROEBLING TYSON, g grandson of the founder, has b elected president of the John A. Roebling's Sons Co., manufacturers of wire products, with plants in Trenton and Roebling, N. J. Mr. Tyson succeeds the late William A. Anderson, who died Sept. 10.

C. R. Tyso

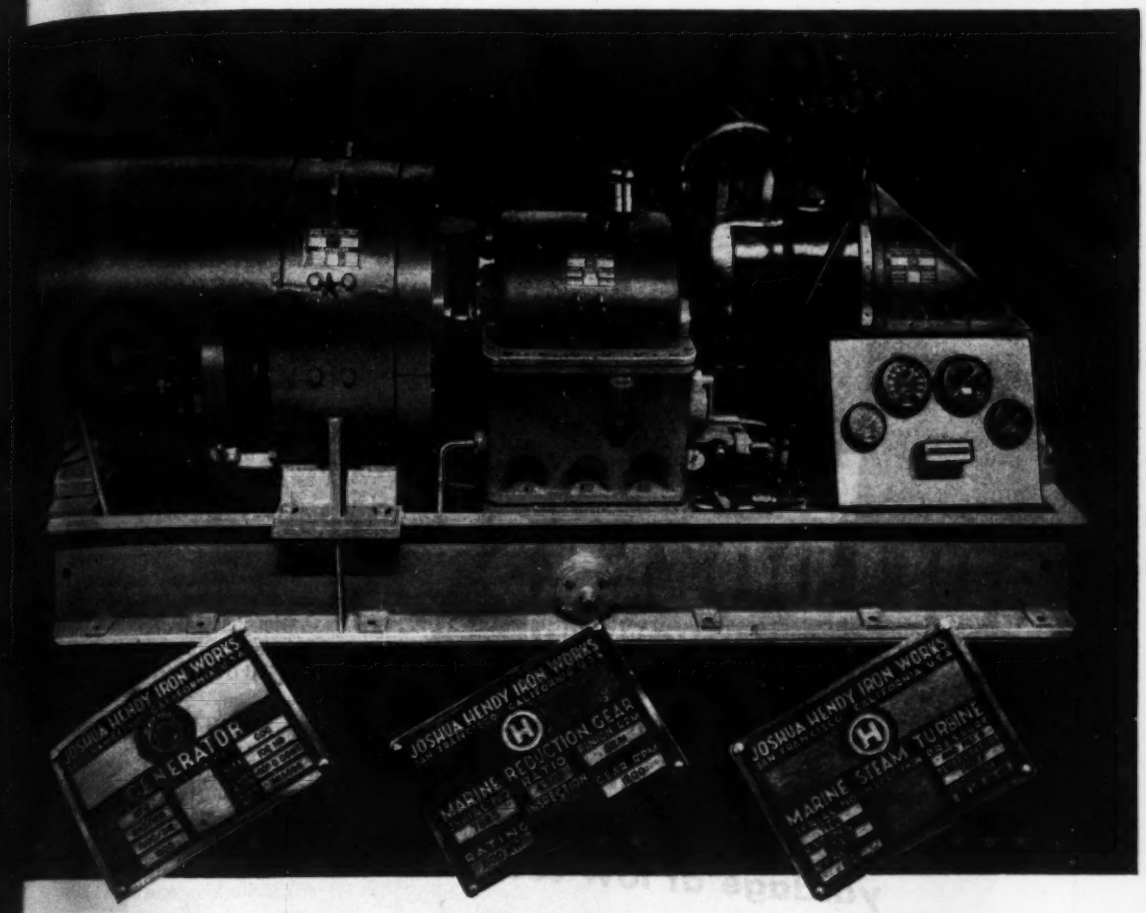
Two years ago the Roebling comp now engaged almost one hundred cent in war production, observed one hundredth anniversary of its fo ing by John Augustus Roebling. is the fourth war in which the comp has producted supplies and material the nation's armed forces.

The election of Lt. Joseph M. bling, now serving abroad with the United States Army Air Corps. as chairman of the of the company, board of directors was also announced. Lieutenant Roebling, since 1936 first vice president, is a son of the late Ferdinand W. Roeb Jr., who was president from 192 1936

J. M. Roebli

Another executive, F. W. Roeb Ill. vice president, is a lieute colonel in the Corps of Engineers.

William C. Dabney, president, J Dabney Co., division of the De Raynolds Co., Louisville, Ky., m facturers of varnishes, lacquers, en and finishes, has announced the chase of land in East Oakland, C



A THREE STAR HENDY PRODUCTION

This turbo-generator set was designed as *one complete* power-generation set—not as three separate units. Turbine, reduction gear and generator—all three, Hendy-designed and Hendy-built to give you complete power equipment from one reliable source.

Hendy specifically designed these 250 to 750-kw sets to include many advanced features usually found only in larger turbo-generators. These clean, compact power plants combine strong, modern construction with exceptional simplicity. The usual maze of piping, valves and levers has been eliminated by placing parts in protected locations, leaving neat and trim contours. Appearance is improved—maintenance simplified.

The all-steel turbine allows unusual accessibility and is precision-constructed to assure excellent operating characteristics.

The reduction gear, smooth and clean like the turbine, has its bull gear and pinion mounted in precision-type babbitt-lined bearings to guarantee quiet operation over long periods.

The conservatively rated generator, either a-c or d-c, assures smooth operation because of the unusually close dynamic balance of the armature.

Together, these three matched Hendy-built units form a turbo-generator set completely designed by experienced Hendy engineers, in a range of 250 to 750-kw, to give you the utmost in service for a wide variety of marine or industrial applications.

For complete data write for new catalog on Hendy Type HG-26 Auxiliary Turbo-Generator sets.

JOSHUA HENDY IRON WORKS

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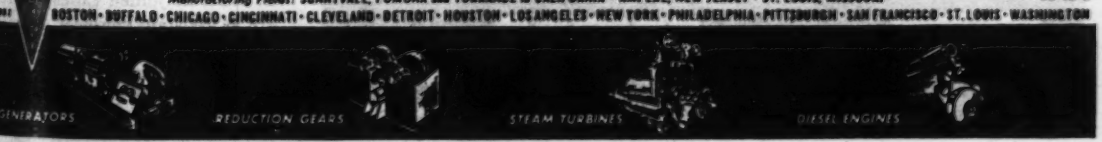
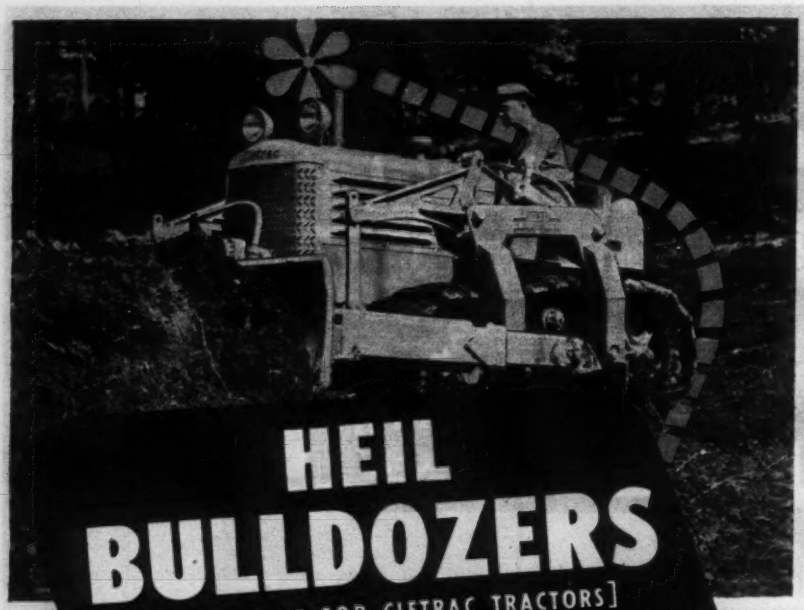
50-78-5

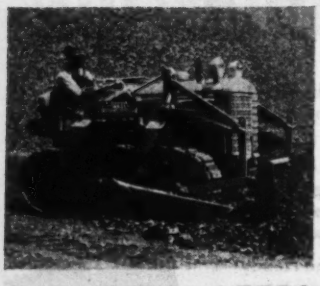




HEIL BULLDOZERS

[TAILOR-MADE FOR CLETRAC TRACTORS]

handle "bonus" loads quickly . . . economically . . . to give you more yardage at low cost



HEIL BULLDOZERS ASSEMBLE COAL PILES FOR PICK-UP BY CLAMS

This Heil hydraulic bulldozer mounted on a Cletrac tractor is doing an excellent job in cleaning up the dock floor of a coal yard. The operator appointed for this job found the controls easy to handle, and in a short time could bulldoze a path that looked like the work of a sweeper. Write for full details

R-40

Note the operator's unobstructed view and the convenience of the controls that enable him to work accurately with no loss of speed. Heil engineers have pioneered the modern practice of replacing heavy cast members with welded box sections that are lighter, stronger, and easier to repair in the field without costly, time-consuming delays.

For full loads and more yardage — at lower cost — use Heil Bulldozers and other famous Heil Earth-moving equipment. Write for bulletins today

See Your CLETRAC TRACTOR DISTRIBUTOR

ARMY NAVY

THE HEIL CO.

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

on the Southern Pacific R. R. company will erect a resin and synt resin plant there immediately after war.

SEVERAL personnel changes have announced by the Hyster Co., Portland, Ore. and Peoria, Ill. manufacturers of hoist equipment and industrial trucks.

P. S. Hill

Philip S. Hill, who has been assistant manager of the eastern division at Peoria, returns to Portland as general sales manager. Previou his Peoria position, Hill was man of the Washington, D. C., office, a trict representative covering the cen United States and Canada. He also various sales positions.

Glen M. Ede, becomes assis manager of the industrial truck division. In eight years as general purchasing agent for the company, Ede made contacts all over the United States and is familiar with truck markets and sales.

G. M. Ede

C. B. Bamberg formerly assistant purchasing agent been made purchasing agent. In he started in the cost department.

B. G. Nordling has been made ager of the parts department, where has been for four years.

F. E. SCHAUMBURG, since 1932 r master for the Chicago and N western Railroad, has resigned to join Caterpillar Tractor Co., Peoria, Ill., as railroad representative, sales development division.

Mr. Schaumburg's work will include the analysis and promotion of the use of "Caterpillar" equip for general off-track railroad const tion and maintenance.

A native of North Dakota, Schaumburg began as a chainman the Northern Pacific engineers in 1 In 1924, he joined Chicago Great W ern as assistant engineer of maintena of way. There he remained till 1 when he became associated with cago and Northwestern, rising to master in 1932.

QUICK QUIZ FOR CONSTRUCTION MEN

One of these Answers May Help You Lower Your Maintenance Costs!

Q **Is there a way to add "M. P. T."* to machines?**

A There sure is. It's an Alemite Portable Service Station. Here's a typical performance: Time was being lost on 5 machines through slow lubricating methods. With the Alemite Portable Service Station, power lubrication was brought "on the job." Lubricating time was cut 50%—gaining 100 minutes "M. P. T." per day. The savings in time, maintenance and machines paid for the new method in a short time. Are you interested in adding "M. P. T." to your machines?

**More Productive Time*

et Set for Winter With "On the Job" Power Lubrication With An Alemite Portable Service Station

his complete power lubrication department on wheels carries ubricants to machines on the job. Developed by Alemite, the unit ncludes high-and-low pressure Alemite Barrel Pumps, Alemite Motor Oil Dispenser, hose reels and gas engine air compressor. It's the sure way to fight ruinous winter friction and costly hut-downs and it is proving itself on thousands of construction jobs. Write for catalog. Alemite, 1821 Diversey Parkway, Chicago 14, Illinois, or Belleville, Ontario.

Q **Can track roller bearing wear be reduced in winter?**

A Of course! One contractor was having an epidemic of track roller bearing failures. He decided to use "on the job" power lubrication. Track roller and other bearing expense dropped 25%. Shut-down time was saved and put back into production. Consumption of lubricants dropped almost 20%! Say! have you checked up on your lubrication methods lately?

Q **Will your greases and oils "take it" this winter?**

A It all depends on whether they're Alemite's. You see, Alemite builds extra-wide operating range into all of its greases and oils. The result is amazing toughness and free-running qualities that fight friction in the coldest weather! Alemite "Sub-Zero" lubricant, for instance, is designed for heavy-duty cold weather work—*actually protects bearings down* to 40° below! Does that kind of performance sound good to you?

WANTED

Tough Job by Man with "MML" Degree!

This man, an Alemite Lubrication Specialist, is a "Master of Modern Lubrication." His technical training, skill and experience equip him to come on your job and consult with you about applying the most modern lubricating methods. He has added more productive time to machines, saved lubricants and man power. He has installed safer, surer, more accurate lubricating methods.

He's ready to go to work for you now, backed by the world's most experienced organization in the handling and application of lubricants. Call him. Or, if you prefer, write Alemite for the address of the nearest Alemite Lubrication Specialist.

Another Product of STEWART WARNER

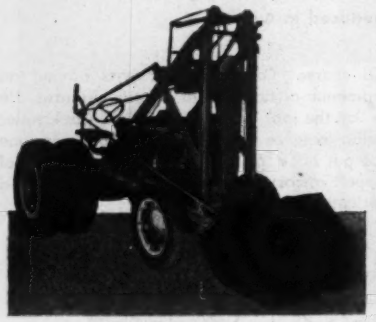
ALEMITE *First in Modern Lubrication*

CONSULTATION • ENGINEERING • EQUIPMENT • LUBRICANTS • MAINTENANCE

New Aids to the Constructor

Front End Loader

Embodying the features of an extensible boom and mechanical power take-off from front of tractor engine, a new front end loader is designed for use with International I-6 and ID-6 tractors. The exclusive boom arrangement places the bucket close to the tractor when digging,



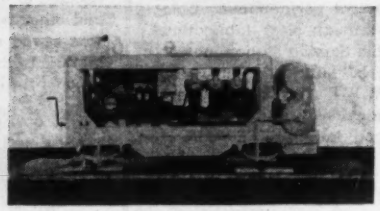
but when the bucket is raised it moves outward and upward, discharging 2 ft. ahead of digging position. This permits loading into high standard trucks and spreading of material without hand shoveling.

The bucket, of 3/8, 1/2 or 5/8-cu. yd. capacity, which can be held or dumped at any point in its lift, can be removed, and a bulldozer blade attached. A 3/4-cu. yd. bucket is available for light materials.—*White Manufacturing Co., Elkhart, Ind.*

• • •

Salvage Compressor

Engineered for use on large salvage projects, a new compressor is spring-mounted on four steel wheels, removable



for boat shipment. Diesel-engine powered, it produces 160 cu. ft. of air per minute. The unit has two special valves, one delivering 100 lb. of air pressure in two-stage operation, the other 40 lb. pressure in single stage operation. A three-way-throw valve permits rapid conversion to desired pressure.

A complete set of underwater pneumatic tools and accessories is furnished with the compressor.—*Davey Compressor Co., Kent, Ohio.*

• • •

Welder's Cape

Giving full protection to welders when operating in all positions, the new Amcoweld Pro-Tecto-Cape also assures free-

dom of movement and sufficient ventilation. This cape is made of durable chrome

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LOAD TESTS—TEST PITS

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3. Easy to maintain . . . paint reaches entire surface.
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Write for catalogue and sample.
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3 FEATURES

AVAILABLE ONLY IN ADAMS MOTOR GRADERS

PROBABLY no one motor grader on the market has an important operating feature which cannot be found in some other motor grader but that doesn't mean that all motor graders are alike or of equal value. Only in Adams do you get the combination of the three operating advantages described below which are preferred by most experienced operators:

❶ 8 Forward Speeds . . . High Transport Speed

Wide working range permits operator to select exact speed to make each cut at fastest practicable rate. Result—more work done per day . . . Transport speeds run as high as 21 mph.

❷ Accurate, Dependable, Mechanical Controls

Not only operate easily and quickly but, because they always operate at uniform speed, provide more accurate adjustments than do hydraulic controls. Two adjustments can be made at same time without affecting speed of either.

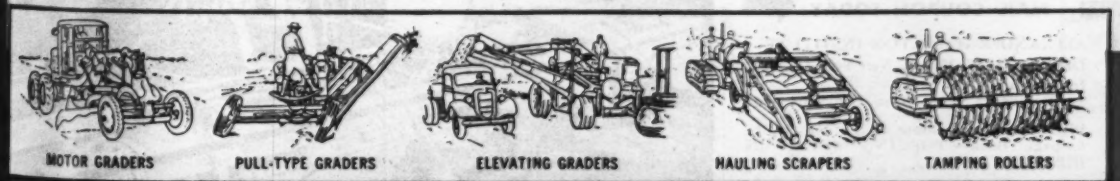
❸ Push-Button Starting From Operator's Cab

Electrically-equipped Adams machines are started as easily as your automobile in any kind of weather. Saves time and tempers on cold mornings.

In addition to these features, you get Strength and Durability . . . Well-Balanced Weight Distribution . . . Adequate Power and Traction . . . Adaptability to a Wide Range of Jobs . . . Economical Operation and "near-by" Adams Service wherever you go . . . See your local Adams dealer now about your post war requirements.

J. D. ADAMS COMPANY • INDIANAPOLIS, IND.

At war's end we'll need many new roads and many jobs for returning service men. Plan post war projects now and meet both needs.



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Among the prominent men who have contributed to the Institute's training plan, which is described in "Forging Ahead in Business," are: Thomas J. Watson, President, International Business Machines Corp.; Clifton Slusser, Vice President, Goodyear Tire & Rubber Co.; Frederick W. Pickard, Vice President and Director, E. I. du Pont de Nemours & Co.

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leather, with underarm flaps and a turn-up collar, held securely in position by special tabs and a snap fastener. The bib front is equipped with snaps for easy removal.—*Eastern Equipment Co., Inc., Willow Grove, Pa.*

• • •

Slab Vibrating Machine

Much experimental research has gone into a new multiple, high speed, internal full depth slab vibrating machine, the manufacturer states. In actual operation, this machine has placed approximately 2,000 yd. of concrete per day, using eight of the 3-in. diam. vibrators on the 25-ft. slab, 12 in. thick. Finished construction reveals that it will vibrate the stiffest concrete on slabs of 12 in. or more in thickness as fast as it can be economically placed on the subgrade.

This new multiple vibrating machine, in low slump concrete (1 in. or less), will produce strengths heretofore unobtainable at low cost. Only one man is required to operate the machine, which can vibrate concrete at a travel rate of from 0 to 22 ft. per minute. The machine is propelled with a fluid motor, which gives a wide range of speed. The 25 ft. wide bar lift, to which the battery of vibrators is attached, is hydraulically controlled, permitting the operator to effect easy positioning control of the vibrators as the machine approaches expansion joints and other obstacles. These controls are so arranged as to permit full-depth vibration of the concrete up to the expansion joint; vibrators can be then lifted to clear the joint, and the machine driven forward sufficiently to submerge the vibrators again under the oscillating screed.

This vibrating machine is designed to use 8 to 18 internal high-speed (9,5 rpm.) vibrators, depending on the je requirements, and gives full depth vibration to the slab regardless of t thickness.—*Viber Co., 726 South Flow St., Burbank, Calif.*

• • •

Detachable Hose Coupling

Mechanically self-sealing, a detac able brass coupling for helical flexib metal hose is available in sizes fro ¾ to 1½ in. inside diameter. No br ing is employed with this unit, whi consists of four parts—nut, back, ste and split ring. The coupling withstan pressure tests of up to 800 lb., it claimed.

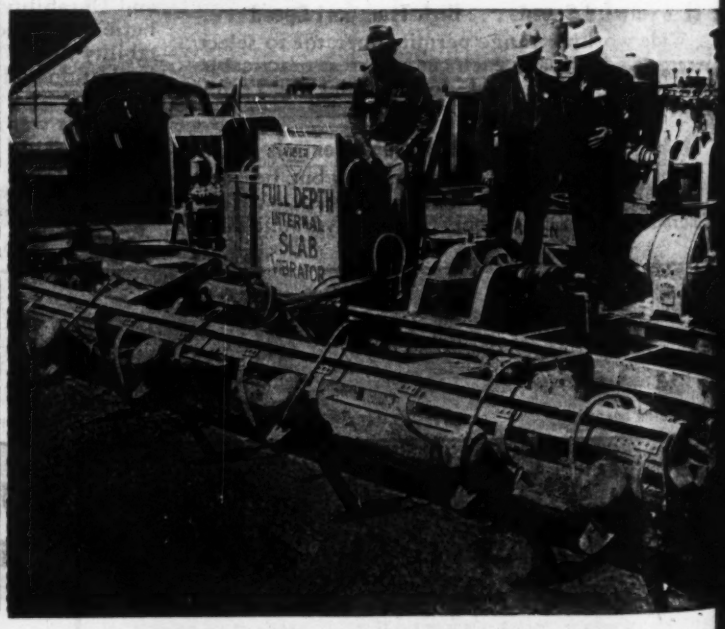
A further feature of the coupling the self-contained union, which permi the pipe thread end to screw direct into the machine fitting and to tightened without twisting the hose.— *Packless Metal Products Corp., N Rochelle, N. Y.*

• • •

Industrial Fluorescent Light

Designed for use in industrial plan a new series of fluorescent lights, Mod 1626-C and 1627-C, are wired for 1 120 volts. These units, using two a three 40-watt lamps respectively, are in. long and 12⅛ in. wide; they may hung individually, or in continuous lin for higher intensity by means of cha conduit or cable.

The outer surface of the reflector a housing is painted gray; the inside wh reflecting surface is of Fluracite. Ball and starters are mounted on top of w ing channel.—*Curtis Lighting, In 6135 West 65th St., Chicago 38, Ill.*



Reports and Pamphlets

(Continued from page 96)

AUKEE, WIS.—23rd Annual Con-lated Report of the Common Council.

ON HEADS OF WATER FLOWING IN SIX-H PIPE AND THE EFFECTS OF PIPE FACE ROUGHNESS AND WATER TEM-ATURES ON FRICTION HEADS—By F. E. ecke and J. S. Hopper. Bulletin No. of the Agricultural and Mechanical ege of Texas, College Station, Texas.

SEVENTEENTH ANNUAL HIGHWAY CON-ENCE ON THE UNIVERSITY OF COLO-o—Engineering Experiment Station, hway Lines No. 17, Boulder, Colo.

VERSION—THE JOB AHEAD—By J. A. ington. Public Affairs Committee, Rockefeller Plaza, New York 20. 10c.

MENTELLE AND THEORETISCHE UN-SUCHUNGEN UBER DAS KOLKPROBLEM lished by Leemann & Co., Zurich, tzerland.

MASSIVBAU STAHLBAU—Published Leemann & Co., Zurich, Switzerland.

ETISCHE GRUNDLAGEN DER FLUTZ-UND BRACHVERBAUUNGEN. Published by mann & Co., Zurich, Switzerland.

CITY GOVERNMENT—Schenectady, Y., 1943. Copies available from the city k.

EDINGS of the 5th annual Highway neering Conference devoted to post-planning, Feb. 29 and March 1, 1944 School of Mines and Engineering, Uni-ity of Utah, Salt Lake City, Utah.

EDINGS of the Second New England ic Engineering Conference, July 13, 1944. National Conservation Bureau, ohn St., New York 7, N. Y.

AN NATIONAL INCOME, Its Probable niture—By Joseph Mayer. The king Institution, Washington 6, D. C.

INGS of the Highway Traffic Con-ce sponsored by the Eno Founda-for Highway Traffic Control, April 944. Available from the foundation at Saugatuck, Conn.

AND SEWAGE SYSTEMS IN INDIANA, Planning of Future Construction —Bureau of Government Research, rtment of Government, Indiana Uni-y, Bloomington, Ind.

ANARASKA WATERSHED—A study in ne with recommendations for the ilitation of the area in the postwar d. The Ontario Department of Lands Forest, Toronto, Canada.

RE ARTERIAL REPORT—A report to Mayor and City Council of Baltimore arterial traffic proposals now before ity. Prepared by Robert Moses and rd of consultants.

PRINTS CAN BE O.K.
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MICROTOMIC
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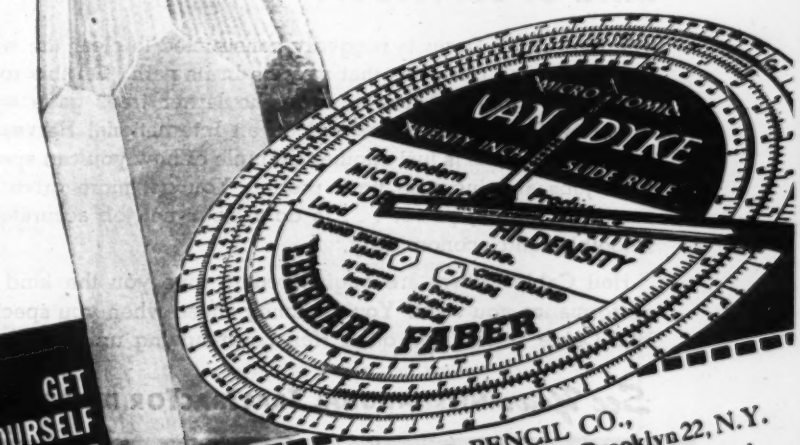
Sharp, readable prints that are clean-cut to the finest detail are the standard result of pencil tracings made with HI-DENSITY lead. It is a quality, above and beyond the smoothness and uniformity of grading for which MICROTOMIC VAN DYKE has won acclaim. Ask an accredited VAN DYKE agent to let you test a HI-DENSITY lead...it's worth investigating!



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For enclosed 25¢, send me your war-time card printed 20" SLIDE RULE.

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POWER to PUSH!

Proved performance in the toughest kind of service...

The Heil Cable Dozer is ruggedly constructed to clear the way . . . moving all obstacles that may be in its path. On this road project in Central America, even the larger trees gave way to a Heil Cable Dozer mounted on an International Harvester TracTracTor. This is just another example of how you can speed your jobs and increase your profits. You get more drive — more penetrating power . . . to do a clean cut job accurately, smoothly, and economically.

Heil Cable Dozers are engineered to give you the kind of performance you want. You're money ahead when you specify Heil Cable Dozers and other Heil Earth-moving units.

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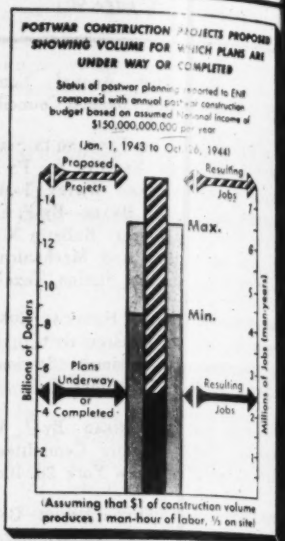
POSTWAR PROJECTS



Projects proposed for postwar construction h been published in these columns since Janu 1943, as they have been reported to Enginee News-Record.

Statistics based on these reports are used the Committee on Postwar Construction of American Society of Civil Engineers to meas the progress of plans for postwar projects.

The chart above shows, both in estimated d lar volume and in jobs or man-years of lab how fast this reservoir of future work is filling

If you or your community are working projects that have not yet been included in "postwar reservoir," please send us an itemi list and description of them, including estima cost and the names of the engineers who at work on the plans. Then as you watch arrows climb you will know that you and y community are contributing to the success of NUMBER ONE JOB of preparing for peace.

Address your projects list to Manager N ness News Department, Engineering Ne Record, 330 W. 42nd St., New York 18, N. Y.

MINIMUM SIZE OF PROJECTS PUBLISHE

Public Works	$25
Industrial Buildings	4
All Other Buildings	15

WATER SUPPLY

PROPOSED WORK

Me., Pownal—State, H. C. Greenleaf, c Institutions, State House, Augusta, m water sys. imprvs., enlarging water re voir, State School. $50,000.

Mich., Allegan—City, WW exten., $ 000.

N. Y., Dansville—Village, repairing sto dam. $50,000. State Aid Planning Fu allotted.

Okla., Sapulpa—City, F. Boone, mgr., Hall, water filter plant, pump. equip., watermain extens. $150,000. Financing provided for.

Va., State Farm—State, Richmond, S filtration plant, water distr. sys., for Penitentiary Farm, State Farm. $17 Funds appropriated.

Man., Carman—Municipality, water t ment plant, new WW sys. $50,000.

Man., Dauphin—Municipality, exten. sys. $40,000.

Man., Neepawa—Municipality, water exten. $25,000.

Man., Souris—Municipality, water s exten. $25,000.

Man., The Pas—Municipality, water ply exten. $40,000.

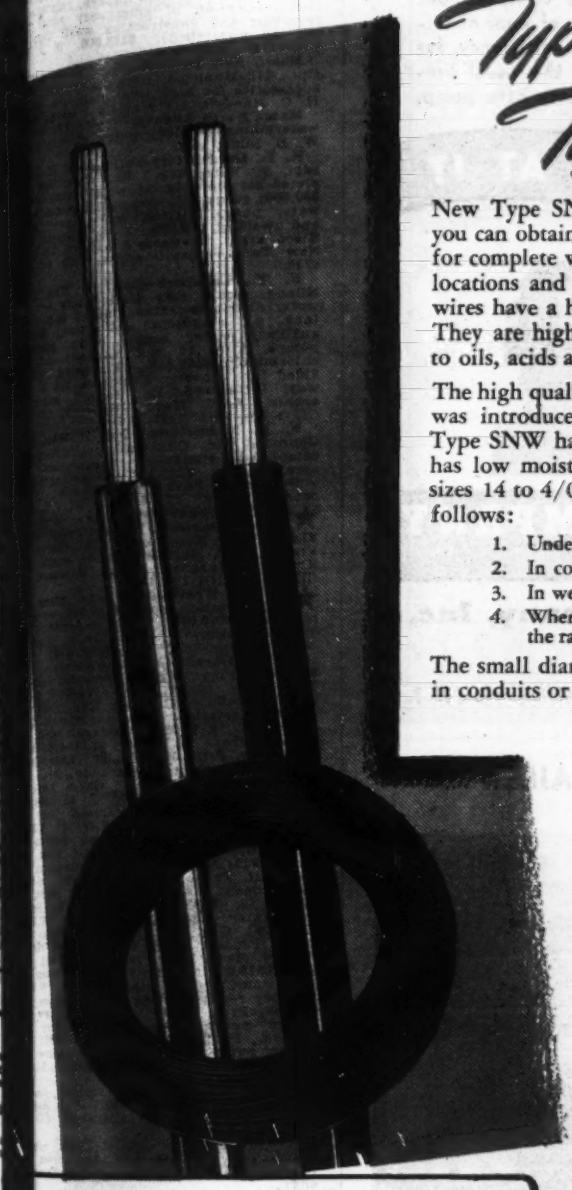
PLANS UNDER WAY

Conn., Danbury—City, Dpt. P. Wks., Main St., plans 90% completed repla mi. c. i. watermains, various con $150,000. S. Rapp, 174 Main St., city

Ga., Thomasville—City, City Hall, 20% completed water supply sys. Financing not yet provided for. Wiedeman & Singleton, Candler Bldg., Atlanta, consult. engrs. C. E. Layton, Thomas city engr.

Ill., Mattoon—City, City Hall, water ply, pipelines and pump. station. E. L. derson, 104 W. Clark St., Champ consult. engr. CD 7/6—ENR 7/27.

...nenol Thermo-Plastic Building Wire for Complete Wiring Installations



Type SNW FOR WET LOCATIONS
Type SN FOR DRY LOCATIONS

New Type SNW completes the Flamenol* Building Wire line. Now you can obtain Flamenol thermo-plastic insulated, small diameter wire for complete wiring systems — Type SNW Flamenol wire to use in wet locations and Type SN Flamenol wire to use in dry locations. Both wires have a hard smooth finish and are easy to strip, splice and pull. They are high in dielectric and mechanical strength and are resistant to oils, acids and alkalies.

The high qualities of Type SN Flamenol wire are well known. This wire was introduced and approved by the Underwriters' before the war. Type SNW has the same high qualities and in addition, its insulation has low moisture absorption. It is approved by the Underwriters' in sizes 14 to 4/0 inclusive for use in raceway systems in wet locations as follows:

1. Underground
2. In concrete slabs or masonry in direct contact with the earth
3. In wet locations
4. Where the condensation and accumulation of moisture within the raceway is likely to occur

The small diameters of both wires enable more conductors to be used in conduits or ducts.

*Reg. U.S. Pat. Off.

G-E BUILDING WIRES, TYPES R AND RH

G-E Type R, code grade and Type RH, heat resistant grade building wires are also available. These building wires are insulated with synthetic rubber. They are carefully made and will give good service.

FOR FURTHER INFORMATION about Flamenol Building Wires, other wires, conduits or wiring devices, see the nearest G-E Merchandise Distributor or write to Section CDW1146-113, Appliance and Merchandise Department, General Electric Company, Bridgeport, Conn.

★ **BUY WAR BONDS AND KEEP THEM** ★

Hear the General Electric radio programs: "The G-E All Girl Orchestra" Sunday 10 P.M. EWT, NBC. "The World Today" news every weekday 6:45 P.M. EWT, CBS.

G-E CONDUITS AND WIRING DEVICES

The General Electric line includes fine conduits and hundreds of wiring devices to meet your needs including: White and Black rigid conduits, EMT, flexible metal conduit, Fiberduct and switches, outlets, sockets, connectors, fuses, fluorescent lampholders and starters, etc.

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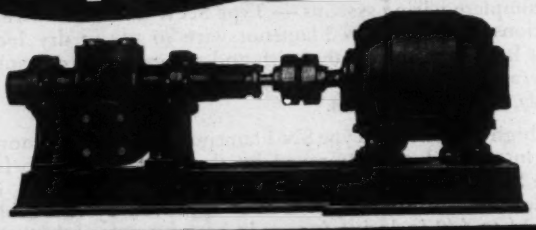
QUIMBY PUMPS

KEEP EVERLASTINGLY AT IT

Quimby Pumps have a way of keeping everlastingly at it, without any sign of wear or let-down in efficiency, far beyond the usual life-expectancy of a pump.



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INCORPORATED
Division of H. K. Porter Company, Inc.
PITTSBURGH, PENNSYLVANIA
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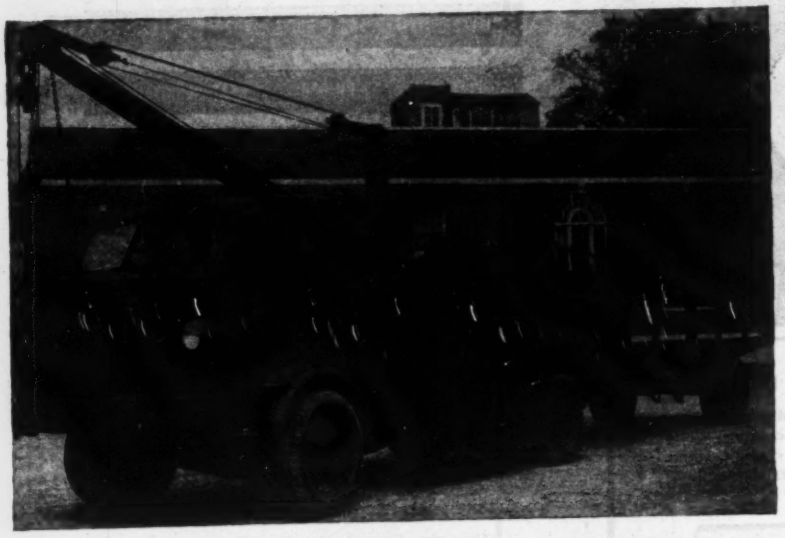
LINN CATRUK AND SEMI-TRAILER



THIS LINN CATRUK, as a prime mover, is equipped with rotable crane, seating capacity for a crew of 14, large tool compartments and, in combination with a quickly detachable **LINN SEMI-TRAILER,** has a definite use as a cargo, salvage, construction or emergency vehicle.

Equipped with both tracks and wheels (the hydraulic retraction makes the change from wheels to tracks in a matter of seconds) permits the negotiation of highway or cross country with equal facility.

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POSTWAR PROJECTS (Cont'd.)

Mass., Brockton—City, plans 90% pleted waterproofing twin concrete s pipes at Avon. $40,00 H. S. Cr City Hall, Zone 20, eng

Mass., Gardner—City Water Dpt., Hall, plans 50% comp d c.i. water extens. and water shed improvs., reforest incl. relocation of emergency outlet reservoir and construct small dam sq. mi. watershed). $11 000. E. J. City Hall, city engr.

Mass., New Bedford—New Bedford Dpt., 312 Municipal Bldg., standpipe, accessories for high leve distr. sys. H. C. Mandell, 312 Municipal Bldg.,

Mass., North Andover—Town, 126 Ma watermains, $11,500; water extens., W. B. Duffy, engr.

N. Y., Garden City—Village, A. H. R supt. P. Wks., 110 7 St., plans 40% pleted service bldg. at water pump. s $30,000; plans 35% completed reconstru water pump. station, incl. control s and dwelling, $60,000. J. W. Schmidt, Kisco, archt. Newsom & Aldrich, 500 New York, consult. engrs. CD 4/7— 4/20.

N. Y., Lockport—Dpt. P. Wks., Niland, comr., City Hall, plans comp water distr. sys. exten., incl. 3 m.g. s tank, c.i. standpipe and exten., auxiliary water supply pump. statio pumps, 5 to 10 m.g. capacity, c.i. chlorinator, $156,423. Financing not vided for. Chester Engineers, 310 E. way, Pittsburgh, Pa., consult. engrs. archts. A. G. Ward, City Hall, city CD 1/10—ENR 1/27.

N. Y., Middletown—Dpt. P. Wks., Chumard, dir., City Hall, preliminary completed standpipe, coagulation aeration, etc. $225,177. Financing not vided for. Barker & Wheeler, A consult. engrs. CD 5/22—ENR 4/1.

★**N. Y., Tonawanda**—Town, prelim plans completed water pump. st $1,000,000. Nussbaumer & Clarke, Franklin St., Buffalo, consult. engrs. Krehbiel, Municipal Bldg., Kenmore. CD 1/10—ENR 1/27.

★**N. Y., Westfield**—Village, plans way filtration plant, $115,000; wate ply line, $140,000; plans impounding Wm. S. Lozier Co., 10 Gibbs St., Roch consult. engr. CD 3/9—ENR 3/23.

Okla., Durant—City, watermain $75,000. Financing not provided for. Toler, Ada, engrs. CD 9/28—ENR 10

★**Pa., Phila.**—City, City Hall, plans way artesian wells, southwest Proj. W.W. 9, $252,000; artesian wells, Phila., Proj. W.W. 8, $2,535,000; c.i. mains, Proj. W.W. 7, $2,025,000; Hill filtered water basin addn., Proj. 5, $4,030,000; new roof, Queen Lane sand filters, Proj. W.W. 3, $510,000; water booster pumps, Queen Lane mentation basin, Proj. W.W. 11, $ flocculating and coagulating basins, mont filtration plant, 1st half, Proj. 1, $946,972; basins, Belmont Filtration 2nd half, Proj. W.W. 2, $405,547; sed tation basin, Belmont filtration plant, W.W. 10, $506,000; new intake Be raw water pump. station, Proj. W.W $152,000; Oak Lane filtered water addn., Project W.W. 6, $2,015,000; ro repairs East Park reservoir, Proj. 45, $6,515,000; reconstructing intakes ners Point Pump. Station, Proj. W.W $76,250; reconstructing intakes Race station, Proj. W.W. 15, $76,250; new driven pump Race high pressure station, Proj. W.W. 14, $255,000; driven pump Fairhill high pressure station, Proj. W.W. 13, $200,000. T. ley, city engr.

Tex., Waco—City, WW imprvs., line pump, unit, etc. $300,000. J. J. Rad surance Bldg., Fort Worth, engr. CD ENR 9/7.

B. C., Ladner—Corp. of Delta, c/o Smith, clk., City Hall, bridge across River. $75,000. C. E. Cooper, Town engr.

Man., Killarney—Municipality, 18 watermains, distr. sys., hydrants and ment plant, $92,500. Post War Recon tion Com., Parliament Bldg., Winnipeg. CD 4/27—ENR 5/18.

Man., Transcona—Municipality, wate ply exten., $22,000. Post War Recon tion Com., Parliament Bldg., Win engrs.

READY FOR BIDS.

Mass., Fitchburg—City, Dpt. P. Wks Hall, plans completed 1 story, 30x brick, concrete, slate pump. station, Rd. $15,000. J. M. Peirce, city engr.

B. C., New Westminster—Munici plans completed watermains in 5 Ave division incl. water tank, water $90,000. A. Hunter, City Hall, works and engr.

Man., Morden—Municipality, plans pleted WW Sys., incl. hydrants, trea plant and 18,505 ft. mains. $95,000.

SEWERS, WASTE DISPO

PROPOSED WORK

Mass., Ipswich—Town, First Sele Town Hall, sewerage sys., construct ing mains, and disposal facilities, etc. $25,000.

POSTWAR PROJECTS (Cont'd.)

Mich., Coldwater—City, sewerage sys., disposal plant, $230,464.

N. Y., Andover—Village, sanitary sewerage sys., sewage treatment works. $200,000. State Aid Planning Funds allotted.

N. Y., Binghamton—City, intercepting sewers, sewage treatment works. $2,000,000. State Aid Planning Funds allotted.

N. Y., Brewster—Village, 5 mi. sewers. $158,000. State Aid Planning Funds allotted.

N. Y., Geneva—City, incinerator, $65,000. State Aid Planning Funds allotted.

N. Y., Lewiston—Village, sewage disposal sys. $175,000. State Aid Planning Funds allotted.

N. Y., Montgomery—Village, sewerage sys., treatment plant. $230,000. State Aid Planning Funds allotted.

N. Y., Montour Falls—Village, sanitary sewerage sys., sewage treatment plant. $255,000. State Aid Planning Funds allotted.

N. Y., Owego—Village, sanitary sewers, disposal plant, garbage incinerator. $400,000. State Aid Planning Funds allotted.

N. Y., Vernon—Village, sanitary sewerage sys., disposal plant. $80,000. State Aid Planning Funds allotted.

Okla., Sapulpa—City, F. Boone, mgr., City Hall, sewage disposal plant. $150,000. Financing not provided for.

Va., Goochland—State, Richmond, enlarging sewage disposal sys., for State Industrial Farm for Women, Goochland, $25,000. Funds appropriated.

Wash., Pullman—City, City Hall, sewage disposal plant. $108,000.

Man., Carman—Municipality, sewage treatment plant. $25,000.

Man., Souris—Municipality, sewage treatment plant. $30,000.

Ont., MacTier—Twp. of Freeman, C. H. King, reeve, MacTier, changing drainage route which enters lower and upper end of Lake Stewart, 2 mi., chiefly thru rock, $30,000.

Que., St. Ephrem—Municipality, J. B. Bolduc, secy., City Hall, sewerage sys. $30,000.

PLANS UNDER WAY

Calif., San Jose—City, City Hall, sewage disposal plant, $350,000; addnl. outfall sewer, $200,000; business district storm sewer, $383,000; sanitary sewers, addnl. and replacements, $125,000. L. Melvin Pollard, City Hall, city planning engr. CD 10/6/43—ENR 10/14/43.

Ill., Champaign—City, City Hall, West End sanitary sewer—local service line, west of Russel St. $25,000. J. Kearns, city engr.

Ill., Danville—City, City Hall, storm and sanitary sewer exten. $100,000. F. Roseman, city engr.

Ill., Urbana-Champaign — Urbana-Champaign Sanitary Dist., North of Big Four Shops, plans 10% completed intercepting sanitary sewers. $265,000. Wilson & Anderson, 104 W. Clark St., consult. engrs.

Ill., Urbana—City, G. Hurd, mayor, City Hall, Southeast Storm Drain and East Main Storm Sewer, $85,000; East University and Park Sanitary Sewer, $8,000; North Cunningham Sanitary Sewer exten. from University Ave. to T. B. Sanitarium, $15,000; J. M. Risch, acting city engr.

Ind., Michigan City—Bd. P. Wks., R. C. Fedder, chn., City Hall, sewerage sys. imprvs. $300,000. Financing not provided for. Phelps & Peck, Brinckman Bldg., consult. engrs. D. C. Ford, City Hall, city engr. CD 3/23—ENR 4/6.

Ia., Ottumwa—City, J. F. Maring, street comr., City Hall, storm and sanitary sewers, $325,000. H. C. Cook, city engr. CD 5/9—ENR 5/13.

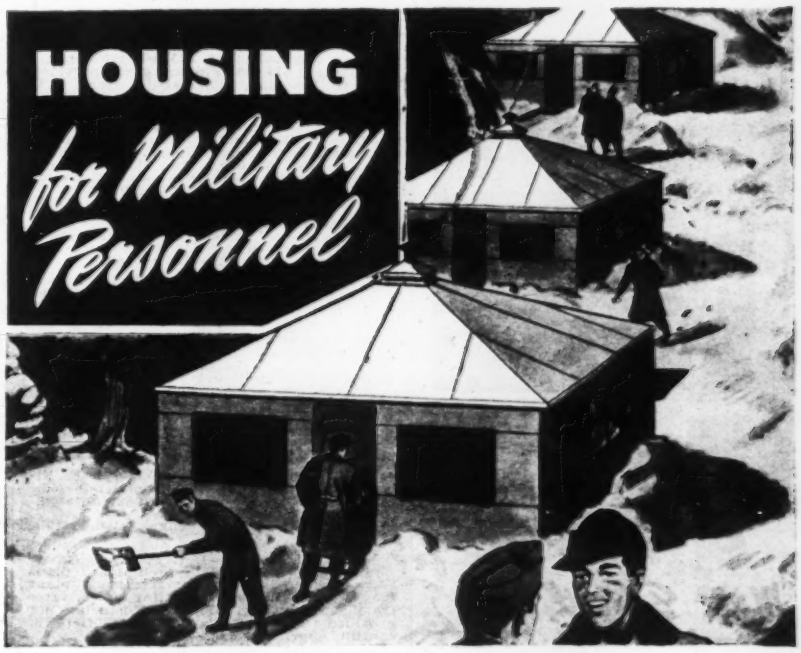
Mass., Belmont—Town, Town Hall, plans completed 18 in. transite vitr. clay and steel sewer outlet for large section in extreme northwesterly part of town, $131,649; Climatis Brook storm sewer 60 in. rein.-con. conduit to large swampy area adjoining Belmont Spring Country Club, $49,000; 10 in. vitr. clay sanitary sewer in Village Hill Rd. Dist., $39,344; Winn Brook storm sewer, Winn Brook, $125,000. Financing not provided for. J. W. Kales, Town Hall, town engr.

Mass., Gardner—City Bd. P. Wks., City Hall, sewage disposal plant, $200,000-$300,000. E. J. Teir, City Hall, city engr.

Mass., Holyoke—Pub. Works Dpt., City Hall, brick, concrete refuse incinerator. $100,000. Keis & Holroyd, 257 Bway., Troy, N. Y., consult. engrs. E. A. Maher, City Hall, city engr. CD 4/12—ENR 4/20.

Mich., Royal Oak—City, E. Shafter, mgr., City Hall, 221 E. Third St., plans 50% completed sewer for Red Run imprv., enclosing drain in concrete sewer structure. $2,000,000. CD 2/17—ENR 3/9.

N. Y., Brooklyn—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, report, studies, etc., fdns., etc., for Owls Head Sewage Treatment Works, Wakeman Pl., Proj. PW-54. Moran, Proctor, Freeman & Mueser, 420 Lexington Ave., New York, consult. engrs.



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POSTWAR PROJECTS (Cont'd.)

N. Y., Canastota—Dpt. P. Wks., J. A. Capparelli, clk., Village Hall, plans completed garbage disposal plant, **$25,000**, sewage disposal plant, **$74,030**. Financing not provided for. M. Vrooman, Gloversville, archt. CD 3/31—ENR 4/20.

N. Y., Dickinson—Town of Dickinson, E. M. Jones, superv., 12 Grant St., Port Dickinson, Binghamton, plans 95% completed sanitary sewers, pump station, Sunrise Terrace. **$55,000**. Wm. H. McFarland, 12 Elizabeth St., Port Dickinson, Binghamton, consult. engr. CD 1/27—ENR 2/10.

N. Y., Freeport—Village, imprv. incinerator, **$40,000**; storm water and gravity drain for power house, **$25,000**; pump house addn., **$20,000**. H. M. Wood, 117 W. Sunrise Hy., village engr. CD 4/20—ENR 5/4.

N. Y., Garden City—Village, 110 7 St., plans 25% completed storm sewer constr. **$50,000**. A. H. Rogers, supt. P. Wks. CD 4/7—ENR 4/20.

N. Y., Little Falls—Dpt. P. Wks., City Hall, plans 85% completed disposal plant and garbage incinerator, **$200,000**, land rights not cleared and financing not provided for; plans 80% completed separation of storm and sanitary sewers incidental to sewerage disposal, **$30,000**, financing not provided for. M. Vrooman, 21 N. Main Gloversville, consult. engr. R. D. Austin, city engr. CD 3/31—ENR 4/20.

N. Y., Lockport—Dpt. P. Wks., J. E. Niland, comr., City Hall, plans completed rein.-con. and vitr., clay trunk sewer exten., **$300,000**. Financing not provided for. A. G. Ward, City Bldg., city engr. CD 12/15—ENR 12/23.

N. Y., Middletown—Dpt. P. Wks., G. W. Chumard, dir., City Hall, preliminary plans 50% completed secondary treatment plant for sewage, **$210,000**; eliminating storm water from sanitary sys., **$75,000**. Financing not provided for. H. C. Carpenter, Middletown, consult. engr. CD 5/22—ENR 6/1.

N. Y., Valley Stream—Village, plans completed storm water drains, **$40,000**. Financing not provided for. J. Flick, 65 Brooklyn Ave., engr. CD 3/9—ENR 3/23.

N. Y., Watertown—City, City Hall, plans 60% completed exten., reconstructing sanitary sewers. **$200,000**. Financing not provided for. Field, Emerson & Morgan, Flower Bldg., consult. engrs. CD 4/7—ENR 4/20.

★**O., Canton**—City, A. W. Fabry, ser. dir., City Hall, surveys sewage disposal plant, **$2,136,600**. Financing not provided for. Alvord, Burdick & Howson, 20 N. Wacker Dr., Chicago, Ill., consult. engrs. CD 12/17—ENR 1/13.

O., Mansfield—City, W. J. Locke, mayor, City Hall, plans under way increasing capacity and efficiency sewage treatment plant, incl. 2 digestors, sludge pump and larger suction piping to storage tank, 2 pre-aeration tanks, 1 addnl. aeration tank, **$435,000**. Financing not provided for. Floyd G. Browne & Associates, Marion Bldg., Marion, consult. engrs. CD 4/3—ENR 4/20.

Pa., Allentown—City Comrs., City Hall, storm water sewer construction—branch and lateral lines in 16th Ward between Juniata St. and south city line and between S. Second and S. Gilmore Sts., **$45,000**; trunk line in 12th Ward from Trout Creek westward to S. 12 St., and branch and lateral lines connecting thereto, **$75,000**; Lancaster Ave. trunk sewer 1,000 ft. north and 500 ft. south from Emaus Ave. and lateral lines connecting into same, **$125,000**; branch and lateral lines in area between S. Franklin and S. 17 Sts., and between South and Walnut Sts., **$35,000**; branch and lateral lines in 19th Ward in area bounded by Chapel Ave. on north and east and south 4th St. on west, sewers connect to Trout Creek trunk lines, **$30,000**. Financing not provided for. R. Van Nest Black, c/o Pennsylvania Planning Bd., Mt. Joy, consult. engr. E. J. Meckley, city engr.

★**Pa., Phila.**—City, City Hall, plans under way 40th Ward, lowlands drainage, Proj. W-61. **$2,000,000**. T. Buckley, city engr.

★**Tex., Corpus Christi**—City, sanitary sewer lines, **$200,000**; storm sewers, **$400,000**; long line storm sewer lines, facilities, **$2,750,000**. Myers & Noyes, Furman Bldg., Corpus Christi, and Tower Petroleum Bldg., Dallas, engrs. A. McCormick, city engr. CD 4/21, 5/12—ENR 5/4, 6/1.

Va., Richmond—Dpt. State Police, U.S. Route 60, sewage disposal plant, structures. **$37,500**. Funds allocated. F. Q. Saunders, Finance Bldg., engr.

Man., Killarney—Municipality, 19,800 ft. sewer mains and trunks, **$99,000**; sewage treatment plant, **$20,000**. Post War Reconstruction Com., Parliament Bldg., Winnipeg, engr.

Man., The Pas—Municipality, sewage treatment plant. **$25,000**. Post War Reconstruction Com., Parliament Bldg., Winnipeg, engrs.

★**Ont., Ottawa**—City, S. Lewis, mayor, City Hall, relief sewers, **$735,000**; second incinerator, **$150,000**. F. C. Askwith, c/o owner, engr.

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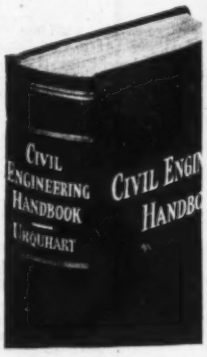

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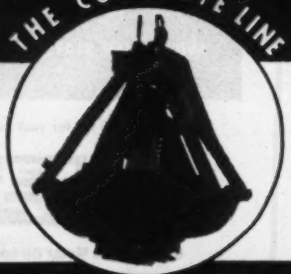

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POSTWAR PROJECTS (Cont'd.)

READY FOR BIDS.

Mass., Gardner—City Hy. Dept., City Hall, plans completed 12- to 60-in. tile and concrete storm water sewers ... 8 streets $68,730. E. J. Teir, City Hall, city engr.

Pa., McKeesport — City, City Hall, plans completed 60 in. rein.-con. relief sewer in Rebecca St. from Dawson St. to Monongahela River, $26,740; 18 in. storm sewer in Nessly St. from Hartman to Jefferson Sts., $5,842; Anderson St. from Hartman to Jefferson Sts., $5,130; 15 in. storm sewer in Morlock Ave. and Myer Blvd. from Riverview St. to Park Rd., $1,305; 5,070 ft. 12 in. storm sewers in various streets, $12,190. L. F. Savage, city engr.

B. C., New Westminster—Municipality, plans completed sewerage sys. in S Ave. Subdivision, $60,000. A. Hunter, City Hall, works supt. and engr.

Man., Morden—Municipality, plans completed sewerage sys., $92,000; sewage treatment plant, $20,000.

CONTRACTS AWARDED

Va., Capron—State, Richmond, sewage-disposal plant, for Southampton Penitentiary, Capron, own forces, $26,000. Funds appropriated.

BRIDGES

PROPOSED WORK

Mich., Jackson—Jackson Co. Road Comm., Jackson, 6 bridges. $80,800.

Mich., Lapeer—Lapeer Co. Road Comm., Lapeer, 2 bridges. $90,200.

N. Y., Hector—Town, 9 bridges. $40,000. State Aid Planning Funds allotted.

N. Y., Watkins Glen—Comrs. Schuyler Co., replacement 20 miscellaneous bridges, $205,000. State Aid Planning Funds allotted.

Tex., Dallas—Comrs. Dallas Co., Courthouse, reconstructing Oak Cliff viaduct. Over $100,000.

PLANS UNDER WAY

Calif., San Jose—City, City Hall, Newhall St. underpass, $200,000. L. Melvin Pollard, City Hall, city planning engr. CD 10/6/43—ENR 10/14/43.

★**Conn., Hamden**—State, Wm. J. Cox, hy. comr., State Office Bldg., Hartford, & Wilbur Cross Pkwy., bridges, rigid frame, rein.-con. over Gilbert, Circular, Whitney and Dixwell Aves., Lane, Benham and Skiff Sts., viaduct spanning Connolly Parkway, $1,000,000. Financing not provided for. L. G. Sumner, State Office Bldg., Hartford, engr.

★**Ill., Chicago**—City, City Hall, plans under way double-leaf bascule bridge each leaf 50 ft. long, 44 ft. roadway, two 11 ft. sidewalks for river crossing at Fullerton Ave., $900,000; bascule bridge 33 ft. roadway connecting Diversey Parkway and Diversey Ave., $1,140,000; substructure bridge to connect Diversey Parkway and Logan Blvd. (superstructure of bridge at Grand Ave. to be floated by barge and erected on new substructure), $360,000. S. J. Michuda, bridge engr. Dpt. P. Wks. W. W. DeBerard, city engr.

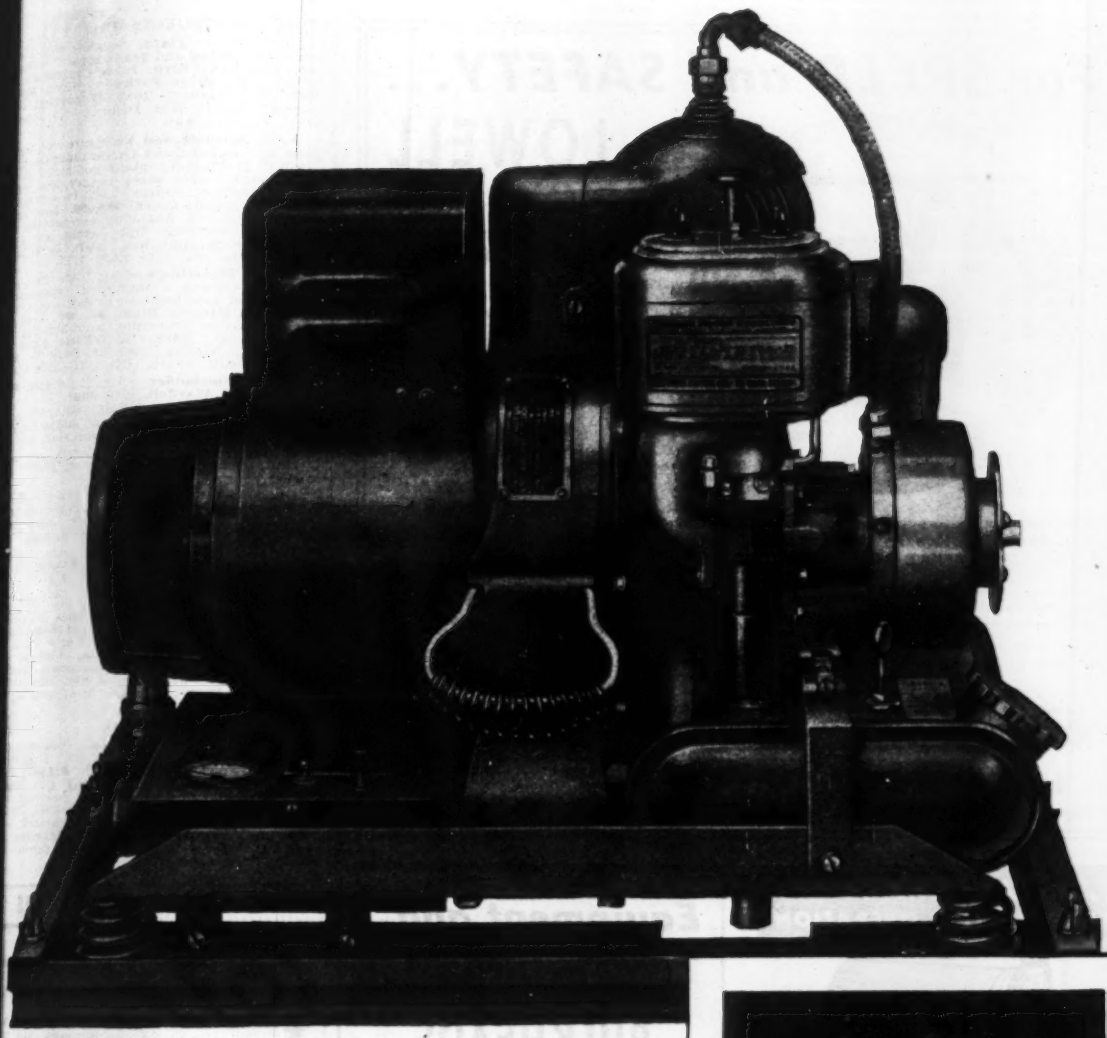
Mass., Gardner—City Hy. Dpt., City Hall, plans completed 48 ft. span skew, sixteen steel beam stringers, all encased in concrete, existing bridge (masonry abutments and wood truss superstructure) to be widened; widened abutments of concrete, single span, $45,000. Land rights not cleared, legal obstacles to be overcome and financing not provided for. E. J. Teir, City Hall, city engr.

★**N. Y., Brooklyn**—Dpt. P. Wks., Municipal Bldg., Zone 7, Stillwell Ave. Bridge over Coney Island Creek, Proj. PS-33. $880,700. Waddell & Hardesty, 101 Park Ave., New York, consult. engrs.

★**N. Y., Brooklyn**—President Brooklyn Boro, Boro Hall, vehicular underpass, Kings Highway and Linden Blvd., PB-1, $500,000. W. Earle Andrews, 30 Rockefeller Plaza, New York, Zone 20, consult. engr. CD 1/25/43—ENR 1/28/43.

★**N. Y., New York**—President Bronx Boro, 851 Grand Concourse, Exterior St. grade separation at McCombs Dam bridge and Jerome Ave., PX-39 $1,525,000; Putnam Express Highway, parallel to N. Y. Central R. R. from Cedar Ave. to W. 192 St., PX-56, W. Frieling, 1000 Woodycrest Ave., consult. archt.; Sedgwick Ave. imprv. from Exterior St. to Mosholu Parkway, grade separation and parkway treatment, PX-40, W. Disbrow, 977 Anderson Ave., Bronx, consult. engr. M. Righton Swicegood, 405 54 St., New York, consult. archt. for above projects. CD 1/25/43—ENR 1/28.

★**N. Y., New York**—President Bronx Boro, 851 Grand Concourse, Exterior St. viaduct from E. 104 to E. 157 Sts., PX-22, $3,150,000. T. A. DePostels, 644 Riverside Dr., consult. archt.; Wm. Disbrow, 977 Anderson Ave., consult. engr.; grade separation at East Tremont Ave. to Webster Ave., PX-30, $500,000. W. Earle Andrews, 30 Rockefeller Plaza, Zone 20, consult. engr.; grade separation at Grand Concourse and Van Courtlandt Ave. East with pedestrian overpass across Mosholu Parkway Dr., PX-65, G. D. Clarke



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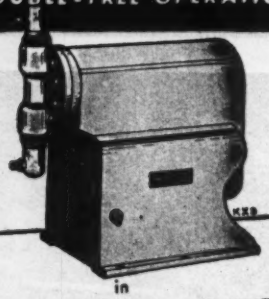

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POSTWAR PROJECTS (Cont'd.)

10 Rockefeller Plaza, consult. engr., completion widening and grade separation Bronner (Eastern) Blvd. from Cypress Ave. Hutchinson River Parkway, PX-53, $6,000. W. Frieling, 1000 Woodycrest Ave., consult. archt., Wm. Dubrow, 977 Anderson Ave., consult. engr.

N. Y., Sardinia and Yorkshire—Bd. of Erie Co., Buffalo, and Cattaraugus Co., Little Valley, preliminary plans completed for 180-ft. span pratt truss steel county line bridge, 24 in. roadway, approx. 2,000 ft. approaches over Cattaraugus Creek, $88,000. Land rights not cleared and financing not provided. Erie Co. Highway Dpt., archt. and engrs., A. J. Yaw, Erie co. supt. hys., both 134 W. Eagle St., Buffalo. CD 7/6—ENR 7/27.

N. Y., Watertown—City, City Hall, preliminary plans completed replacement, widen, and new location bridge over railroad tracks at Eastern Blvd., $65,000. Legal obstacles to be overcome, and financing not provided for. Barker & Wheeler Engrs., 50 State St., Albany, and 11 Park Pl., New York, consult. engrs. CD 3/31—ENR 4/20.

Wis., Rhinelander—City, 2 bridges, $60,000. T. M. Wardell, city engr.

B. C., Ladner—Corp. of Delta, c/o J. Smith, clk., City Hall, WW addns., impts., $50,000. C. E. Cooper, Town Hall, engr.

B. C., New Westminster—City, new Lulu Island bridge, $125,000. R. E. Potter, city owner, engr.

Ont., Ottawa—Dominion Govt., Ottawa, bridge across Rideau Canal connecting Templeton Ave. and Somerset St. west, $100,000. Dpt. of Transport, Ottawa, engr.

Ont., St. Thomas—Municipality, constructing Ross St. subway. $85,000. W. Miller, City Hall, engr. CD 10/19.

READY FOR BIDS.

N. Y., Eden—Bd. Supervs. Erie Co., County Hall, Buffalo, plans completed East Church Rd. bridge, 265 ft. plate girder arch, 24 ft. roadway, approx. 1,600 ft. highway approaches, bituminous macadam surface treated. $80,000. Erie co. Hy. Dpt., archt. and A. J. Yaw, co. supt. hys., both 134 W. Eagle St., Buffalo.

CONTRACTS AWARDED

N. Y., Hudson—Comrs. Columbia Co., plans completed Proj. CB3, Bridge 78, I-Beam and concrete slab $14,047; Proj. CB4, Bridge 95, $13,032; Proj. CB5, Bridge 79, $22,000, financing not provided; plans 50% completed Proj. CB5, Bridge 103, $30,000, land rights not cleared, legal obstacles to be overcome, financing not provided for. Work by own forces. 3/31—ENR 4/20.

STREETS AND ROADS

PROPOSED WORK

Mich., Baldwin — Lake Co. Road Comn., Baldwin, 3 roads. $177,245.

Mich., Eagle River—Keweenaw Co. Road Comn., Eagle River, road. $270,000.

★**Mich., Grand Rapids** — Kent Co. Road Comn., Grand Rapids, 8 roads. $577,300.

Mich., Jackson—Jackson Co. Road Comn., Jackson, road. $187,500.

Mich., Kalkaska — Kalkaska Co. Road Comn., Kalkaska, 3 roads. $120,100.

N. Y., Dansville—Village, imprv. Main St. and 6 mi. village streets. $150,000. State Aid Planning Funds allotted.

N. Y., Lake George—Comrs. Warren Co., reconstructing hy., Palisades-Brandt Lake, $52,500. State Aid Planning Funds allotted.

★**N. Y., Yonkers**—City, repaving and widening McLean Ave., $195,000; Midland Ave., Central Park, $120,000; Kimball Ave. Sect. 1, $160,000; Kimball Ave. Sect. 2, $145,000; Kimball Ave. Sect. 3-Halstead Ave., $114,000; Bronxville Rd.-Palmer Rd., $120,000. State Aid Planning Funds allotted.

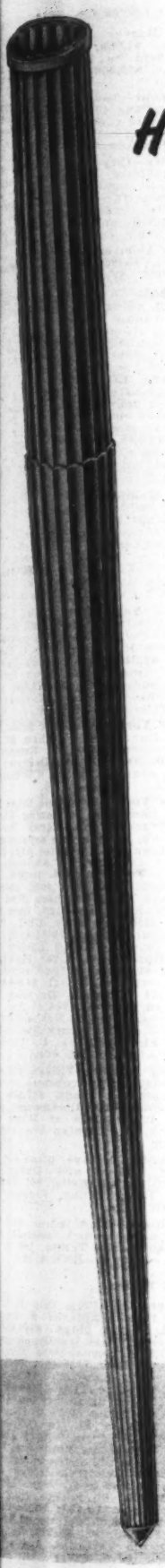
Tex., Kerrville—City, 50 blocks street paving. $100,000.

Wis., Lodi—City, R. R. Risen, clk., City Hall, paving streets. $30,000.

PLANS UNDER WAY

★**Calif., San Jose**—City, City Hall, San Carlos St. widening, Market St. to Race Ave., $253,000; South 4 St. exten. to Sixth, $175,000; Minnesota Ave. exten., easterly to Alma Ave., $90,000; Julian St. exten., westerly to The Alameda, $40,000; Rosa St. Bridding St. connection (First to Spring), $60,000; Bayshore Highway feeder, $320,000. L. W. vin Pollard, City Hall, city planning engr.

Ill., Urbana—City, G. Hurd, mayor, City Hall, widening, resurfacing West Elm St. between Race and Busey Sts., $27,200; Sidney Lincoln St. from Washington to Flora St., $16,000; West Nevada St. between Lincoln and Mathews Sts., $60,500; South Race St. between Washington to Flora St., $30,000; West Springfield Ave. between Wright and Coler Sts., $25,000; resurfacing, new concrete curb and gutter, West California St. between Bway. St. and Lincoln Ave., $60,000; resurfacing South Bway. between Washington and Green Sts., $17,000; concrete pave Cedar St. between Green and Washington



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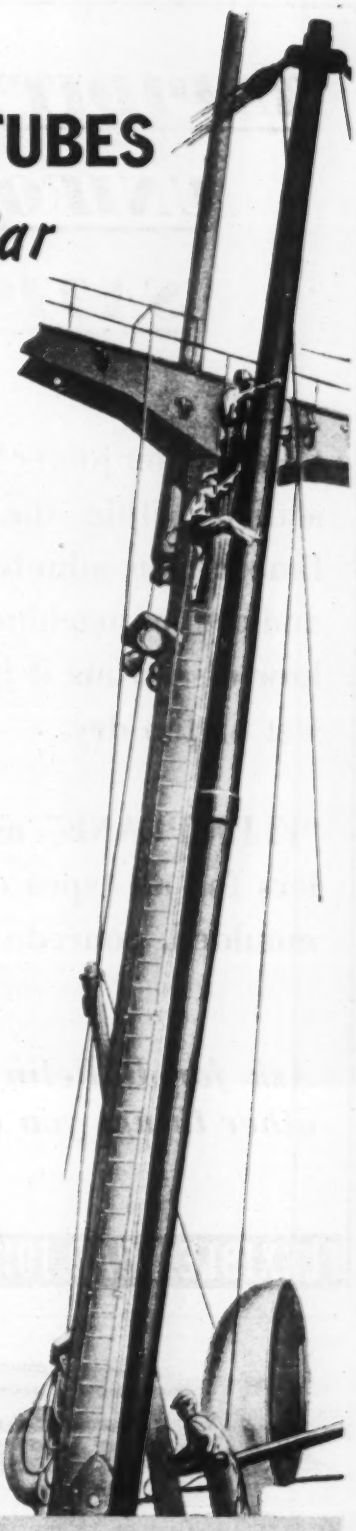

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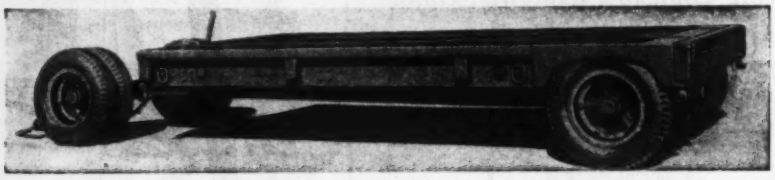

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These units can be loaded from front, sides or rear.

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POSTWAR PROJECTS (Cont'd.)

Sts., $23,400; Harvey St. from Main Springfield Sts., **$7,600;** Gregory St. fr Main to Springfield Sts., **$4,400;** rocking oiling 15 blocks, **$25,000,** ... M. Kinch, ing city engr.

★**Mass., Belmont**—Town Town Hall, pl completed setting 40 ... straight an mi. circular granite curbs ... on main str **$701,200.** Financing not provided for. J. Kales, Town Hall, town engr.

Mass., Gardner—City ... Dpt., City H plans 75% completed, ... reconstruct imprvs., incl. soil cement ... stabilization and bituminous surface, ... bituminous con on old concrete roads, ... concrete curb walks, re-alignment and ... widening, drain **$175,000.** E. J. Teir, City Hall, city engr.

Mass., North Andover—Town, 120 Main finish Main St. **$5,000;** Water St. **$20,** Green St. **$28,000.** W. D. Duffy, engr.

★**N. Y., Buffalo** — Bd. ... Comrs. Erie County Hall, plans completed Serial ... bituminous macadam pavement 3.9 mi., ... ft. span I-Beam bridge, 26 ft. roadway, ... View Rd., in Hamburg, **$264,200;** Serial ... bituminous macadam on 9 in. concrete surfacing 1.6 mi., and rein.-con. paving ... mi. Walden Ave. Elliott Exten., in Ch ... towaga and Lancaster, **$478,500,** land ri not cleared and financing not provided preliminary plans completed Serial 225 ... mi. rein.-con. by. connecting Niagara T way, in Tonawanda, **$540,000,** financing provided for. Erie co. Highway Dpt., a and A. J. Yaw, co. supt. hys., both 13 Eagle St. CD 1/27—ENR 2/10.

N. Y., New Hampton—Dpt. P. Wks., nicipal Bldg., Zone 7, plans under way, re incl. landscaping and drainage, CS-2 single dwellings, residences for officials, S roof over grandstand, CS-8, all at New City Reformatory, for Dpt. Correction, Centre St., New York, Zone 7, **$89,240.** Clark, 101 Park Ave., New York, Zone archt. State Aid Planning Funds allott

★**N. Y., New York**—Dpt. Parks, Arc Bldg., Central Park, 64 St. and 5th A plans under way Pelham Parkway recond tion from Bronx River Parkway to Eas Blvd., P-80. **$2,325,000;** Mosholu Park reconstruction, from Bronx River Park to Grand Concourse, P-79, **$1,762,500.** G Clarke, 10 Rockefeller Plaza, Zone 20, sult. engr. CD 9/23—ENR 9/30.

★**N. Y., New York**—President Bronx B 851 Grand Concourse, Fordham Rd. ening from Webster Ave. to Exterior PX-56, **$12,200,000.** T. A. DePostels, Riverside Dr., consult. archt. CD 3/11 ENR 3/18/43.

★**N. Y., New York**—President Bronx B 851 Grand Concourse, widening Wh Ave. from Bruckner (Eastern) Blvd. Westchester Ave. with grade separation Bruckner Blvd. and Westchester Ave., P **$2,050,000,** Wm. Disbrow, 977 Anderson consult. engr.; Fordham Rd. imprv., ster Ave. to Southern Blvd. incl. under at Crotona Ave. and Southern Blvd., realignment of Southern Blvd. from F ham Rd. to Bedford Park Blvd., PX **$740,000;** Madigan Hyland, 28-04 41 St., Island City, consult. engr.; Eastern exten. from Hutchinson River Parkwa E. 222 St., PX-41, Eastern Blvd. exten E. 222 St. to city line, PX-42, **$4,000,** De Pastels, 644 Riverside Dr., New archt., Madigan-Hyland, 2804 41 Ave., Island City, consult. engr.; Mosholu Par exten., Gun Hill Rd. to Henry Hudson P way P-139, **$1,725,000,** G. D. Clarke Rockefeller Plaza, consult. engr.

N. Y., Valley Stream—Village, plans completed constructing concrete shou **$130,000;** resurfacing roads, **$17,350;** con. intersections, **$30,000;** removing, re ing concrete intersection at Monro **$4,000.** J. Flick, 65 Brooklyn Ave., engr 4/7—ENR 4/20.

N. Y., Yorkville—Village, plans 50% pleted imprv. Myers and Dudley **$30,000,** Merritt & LaBella, 901 First tional Bank Bldg., Utica, consult. CD 6/21—ENR 6/29.

Tex., Harlingen—City, plans 50% pleted street asphalt and concrete pa imprvs. **$100,000,** A. Tamm, 107 S. consult. engr. CD 8/2—ENR 8/24.

READY FOR BIDS.

★**Pa., McKeesport**—City, City Hall, completed repaving Market St. from 13 Aves. and raising bldgs., **$169,852;** sailles Ave. from Park to Grandview also laying 18 in. terra cotta sewer Soles to Maple Sts., **$155,487;** Walnu from point 800 ft. more or less north wardly from 24 to 36 Aves., **$152,900;** 5 Ave. from Rebecca St. to city line, **$1** Fawcett St. and laying of 15 to 18-in. sewer from Dewees St. to O'Neil **$41,360;** Market St. from 3 to 4 Aves. 3 Ave. from Market to Water Sts., **$** Soles St. from Baillie Ave. to Jenny St., **$22,850;** Shaw Ave. from Huey to C Sts., **$19,925;** Sixth Ave., from Loc Huey Sts., **$18,950;** Shaw Ave. from L to Jenny Lind Sts., **$9,420;** Union St. Baillie to 6 Aves., **$8,857;** Ringgold Ave. Locust St. to Sinclair St., **$6,410;** reall O'Neil Blvd. from Versailles Ave. to J son St., **$82,600.** L. F. Savage, city engr.

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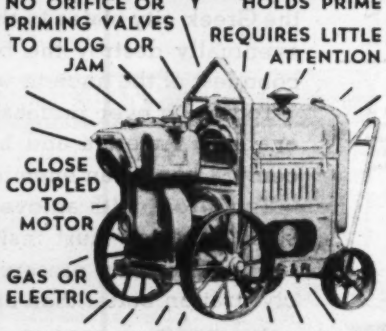

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POSTWAR PROJECTS (Cont'd.)

CONTRACTS AWARDED

N. Y., Hudson—Comrs. Columbia ... plans 50% completed bituminous macad... surfacing 4.7 mi. Proj. C-11, Harlem... Ghent, $75,000; 1.3 mi. Proj. C-14, Nivervi... Chatham Center, $22,000; 0.4 mi. Proj. C... Stuyvesant Falls Route 9 to 396, $8,000; ... mi. Proj. C-12, County Rd. 6, $18,000; pl... 90% completed 4.5 mi. Proj. C9, Manorv... Lake Tagkanic Rd., $75,000; plans 80% c... pleted 2.6 mi. Proj. C-10, Pulvers Corn... $40,000; plans 10% completed new constr... tion, $37,000, own forces. Land rights ... cleared, legal obstacles to be overco... financing not provided for. CD 3/31, 7/... ENR 4/20, 7/27.

PROJECTS CANCELLED.

N. Y., Roslyn—Village, cancelled im... hys $51,500. CD 5/24—ENR 6/1.

EARTHWORK, WATERWAYS

PROPOSED WORK

N. Y., Corning—City, Monkey Run C... Channel imprvs. $200,000. State Aid P... ning Funds allotted.

Tex., Houston—Harris Co. and Harris ... Navigation Dist., Courthouse, widen... straightening Morgans Point area. $25... or more. Bond election Nov. 7.

★**Ont., Ottawa**—Dpt. Transport, repair ... embankment, dredging, replacement ... some locks and dams on Rideau Canal. C... $500,000.

★**Que., Sherbrooke**—Dpt. P. Wks., Otta... Ont., flood control project for East ... Twps. Dist. $5,000,000.

PLANS UNDER WAY

★**Calif., San Jose**—City, City Hall, ... velopment Port of San Jose. $2,520,0... L. Melvin Pollard, City Hall, city planni... engr. CD 10/6/43—ENR 10/14/43.

Ill., Danville — Danville Sanitary D... Perrysville Rd., fill concrete levee and ... in trickling filter. $250,000. J. E. Ei... Danville Sanitary Dist., Perrysville ... engr.

Me., Augusta—City, W. W. Hill, en... City Hall, plans under way 4 concrete ... taining walls to maintain grades of cert... streets. $25,000.

B. C., New Westminster—Dpt. P. W... Ottawa, Ont., imprv. work on North A... Fraser River jetty and exten., imprv. Alb... Dyke at Steveston, $50,000; bank protect... work on Kirkland Island, Richmond, $43,0... R. E. Potter, City Hall, engr.

Ont., Long Branch (Postal District ... ronto)—Municipality, S. Wright, reeve, L... Branch, removing island in Etobicoke Ri... eliminating flooding and straightening ri... at Lake Promenade so that it will ... directly into lake. $70,000. Dpt. P. W... Toronto, engrs.

PUBLIC BUILDINGS

PROPOSED WORK

Ind., Elkhart—City, City Hall, fro... high school. $165,000 or more. Site p... chased.

★**Ind., Gary**—Bd. School Trustees, E. ... Doyne, pres., 524 Garfield St., Roosev... High School addn., $350,000; Edison H... School, 5 class room, gymnasium, auditori... addn., $200,000; same for Tolleston Sch... $200,000; Washington High School ad... $150,000; Jefferson School addn., $150,0... Beveridge School addn., $150,000; Glen P... School addn., $150,000; 26 St. school, $150,0... boiler house, Forbel High School, $60,0... Financing not provided for.

La., St. Martinsville—St. Martin Par... Police Jury, St. Martinsville, war memo... center bldg. $275,000.

★**Me., Orono**—University of Maine, A. ... Hauck, pres., Orono, brick, steel sc... unit bldg., $350,000; brick, steel engineer... bldg., campus, $450,000.

Mich., Jackson—City, 3 bldgs. $297,50...

★**Mo., Clayton (St. Louis P.O.)**—St. Lo... Co., c/o County Court, Clayton, ... Louis, Zone 5, brick, stone rein.-con. co... house and jail. $1,000,000 plus.

★**Mo., Clayton (St. Louis P.O.)**—St. Lo... Co., c/o County Court, Clayton, St. Lo... Zone 5, isolation hospital on county hosp... grounds. $750,000.

†**New Hampshire**—Veterans Admin., W... mont Ave. between H and I Sts. N.W., Wa... 25, D. C., 150 bed capacity hospital. O... $150,000. Site not selected.

N. J., Westfield—Bd. Educ., 301 Clark ... 2 or 3 story, brick high school. $150,000 ... more. Site not selected.

★**N. Y., Bedford Hills**—Dpt. P. Wks., ... Office Bldg., Albany, Zone 1, rehabili... tion work at Westfield State Farm for C... rection Dpt. $574,800.

N. Y., Elizabethtown—Comrs. Essex ... county bldg. addn., $60,000; county ho... imprvs., addn., $125,000. State Aid Plan... Funds allotted.

WAR PROJECTS (Cont'd.)

Y., Hudson—Dpt. P. Wks., State Office Albany, Zone 1, auditorium and ...stern at N. Y. State Training School Girls for Social Welfare Dpt. $179,000.

Y., Morrisville—Dpt. P. Wks., State ... Bldg., Albany, Zone 1, Home Eco... Bldg., at New York State Agricul... & Technical Institute for Education Educ. Bldg., Albany, Zone 1, $367,200.

Y., New Paltz—Dpt. P. Wks., State ... Bldg., Albany, Zone 1, gymnasium health education bldg., at State Teachers ... for Education Dpt., Education Bldg., ... Zone 1, $501,000.

Y., Niagara Falls—City, Water Bureau ...,000. State Aid Planning Funds ...ted.

C., Rocky Mount — State Training School for Negro Girls, Mae Holmes in ...ys. Rocky Mount, administration bldg., ... house, barns, infirmary, dormitory, ...rintendent's home, etc. $840,000. Site selected.

a., Newkirk—Bd. Educ., R. Leighty, ... City Hall, high school. $200,000. Land ...s not cleared and financing not pro... for.

a., Sapulpa—City, F. Boone, mgr., City ... city hall and auditorium. $150,000. ...ancing not provided for.

Tex., Canyon—West Texas State Teach... College, Canyon, men's dormitory, ...,000; Fine Arts bldg., $175,000; voca... bldg., $175,000; gymnasium, health ... physical education bldg., $60,000; stu... memorial bldg., $150,000; library, ...,000; women's dormitory, $175,000; ..., $48,000; water facilities expan., over ...,000; sanitary sewer facilities expan., ...,000; completing partially-completed ..., $200,000.

Tex., Denton—State College for Women, Denton, dormitory, $200,000; main dining ..., $500,000; 2 dormitories, $400,000; sani... sewer imprvs., expans., over $25,000; ...er or steam heating plant unit, $40,000; ...er facilities imprvs., expan., over $15,000; ...caping, drainage, leveling, concrete ...walks, paving, etc., over $25,000.

Tex., Denton—North Texas State Teach... College, Denton, industrial arts bldg., ...,000; press bldg., $150,000; women's dor... ..., $200,000; men's dormitory, $250,000; ...nts Union bldg., $200,000; gymnasium, ...; science bldg., $175,000; power and ... plant, $40,000; college grounds grad... paving, rein.-con. walks, drainage, etc., ..., $40,000; water facilities, over $25,000; ...nsion sanitary sewers and facilities, ..., $25,000.

Virginia — State, Richmond, bldgs. for Petersburg State Colony, Petersburg, ...,000; structures, land and equip. for ... Bd. Corrections, Regional Prison ...a, Spring and Belvedere Sts., Rich... ..., $206,350. Funds appropriated. Sites selected.

., Capron—State, Richmond, cold stor... plant, $32,000; power plant, $80,000; fire ...unts, water lines, fire hose, $6,500, for ...hampton Penitentiary Farm, Capron. ...s appropriated.

a., Lynchburg—State, Richmond, school ...d auditorium, $200,000; hot water stor... tank, $3,500; new sidewalks, $20,000; ...itory for epileptics, $360,000; dining ... and kitchen bldg. for same, $60,000; ...oyee dormitory, $85,000; 2 staff resi... ..., $22,500; boiler and stoker, $20,000; ...deling, fireproofing old bldgs., $36,000; ... farm bldgs., $6,000, for Lynchburg ... Colony, Lynchburg. Funds appro... ...ed.

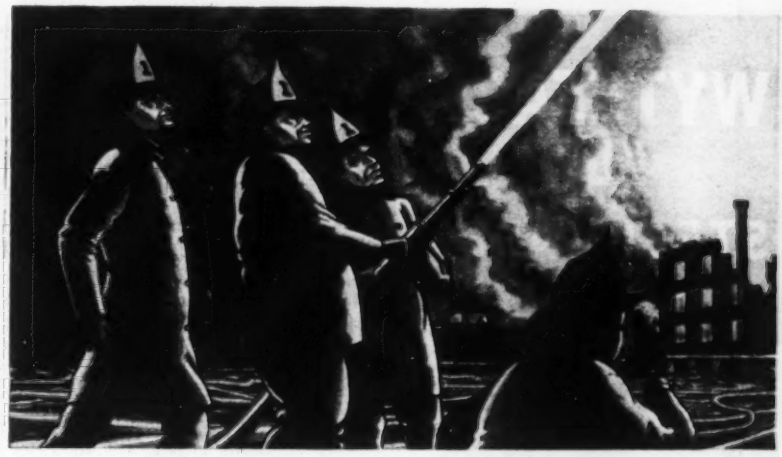
., Marion—State, Richmond, reception ..., $175,000; medical center and receiv... ...dg., $100,000; slaughterhouse and poul... barn, $9,500; imprv. power and light ..., $62,650; rewiring Davis Clinic, $5,000; ...leting auditorium, $10,000, for South... ...rn State Hospital, Marion. Funds ...propriated.

a., Petersburg—State, Richmond, crim... ...al bldg., $250,000; brick wall around ..., $20,000; employee dormitory, $160,000; ...culosis treatment bldg., $120,000; bldg. ...ouse laundry equip., $30,000; refrigera... room and equip., $20,000; remodeling, ...roofing old bldgs., $30,000, all for Cen... State Hospital, Petersburg. Funds ...propriated.

., State Farm—State, Richmond, new ... house, fixtures, $39,950; vocational ...ing shops, $50,000; permanent inmate ...ers, $75,000; water tank, fire hydrants, ...; expan. sewage disposal plant, $7,500; ...ry equip. $12,000; granary, $5,000, for ... Penitentiary Farm, State Farm. Funds ...propriated.

a., Staunton—State, Richmond, new ...dgs., remodeling old bldgs., $947,000; ...tion bldg., $235,000; remodeling, fire... ...g old bldgs., $35,000; new boiler plant, ...; elevator, administration bldg., ... Funds appropriated.

a., Williamsburg — State, Richmond, ...spital bldgs., dormitories, storehouses, ...e, shop, laundry, employee housing ...,000; rebuilding plant accommodating



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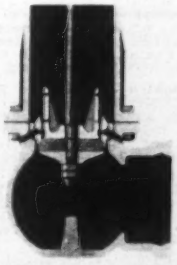

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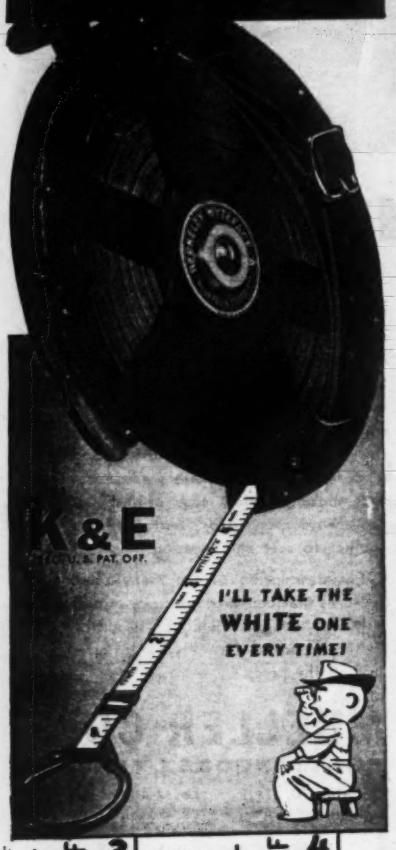

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POSTWAR PROJECTS (Cont'd.)

1,600 patients, administration bldg., receiving and hospital bldgs., dormitories, recreation and auditorium bldg., dining and kitchen bldg., utility services incl. heat, water and sewerage, $1,751,274, at Dunbar Farm, near here, for Eastern State Hospital, Williamsburg. Funds appropriated.

★**Wash., Centralia**—School Bd., high school. $600,000.

★**Wash., Seattle**—School Dist. 401, Seattle, $300,000 bond election Nov. 7, 3 school bldgs. in Highline Dist., south of here. $1,280,000.

Man., Morden—Municipality, auditorium, town hall and courthouse. $200,000.

Man., Russell — Municipality, auditorium and municipal office bldg., fire station, hospital. $175,000.

Ont., Sarnia—City, Miss M. D. Stewart, clk., W. C. Hipple, mayor, City Hall, war memorial civic centre, incl. skating rink, roller rink, swimming pool, gymnasium, etc. About $250,000. CD 4/12—ENR 4/20.

PLANS UNDER WAY

★**Calif., San Jose**—City, City Hall, 9 fire houses, $185,000; city hall, $500,000; 3 branch libraries, $75,000; veterans bldg., $100,000. L. Melvin Pollard, City Hall, city planning engr. CD 10/6/43—ENR 10/14/43.

★**Conn., Hartford**—City, Postwar Pub. Wks. Com., Municipal Bldg., plans by C. Whiton, Bureau of Architects, 550 Main St., brick, steel Old Folks home, Holcomb St. $625,000.

Conn., Milford—Town, Judge O. W. Platt, Bd. Educ., West River St., plans by W. J. Provoost, 421 Main St., Stamford, school, Rivercliff Dist. Over $150,000.

Conn., Westport—Town, Supt. Schools, 132 W. State St., plans by Tooker & Marsh, 101 Park Ave., New York, N. Y., 2 story, bsmnt., brick, concrete, steel, 2 wing addn. to Staples High School, $300,000.

La., LaFayette—Police Jury of LaFayette Parish, Lafayette, plans by A. Hays Town, Louisiana National Bank Bldg., Baton Rouge, 1,500 seating capacity War Memorial auditorium, $319,000. $385,000 bond election Nov. 7, for same.

La., Leesville—Vernon Parish School Bd., plans 5% completed by M. J. Heinberg, Commercial Bldg., Alexandria, gymnasium and auditorium. $150,000.

Me., Augusta—State and City of Augusta, M. William, mayor, City Hall, Augusta, sketches completed by Bunker & Savage, 256 Water St., brick, steel armory, State House Park. $230,000. CD 7/10—ENR 7/27.

Mass., Amherst—Commonwealth of Massachusetts, Dpt. Educ., 200 Newbury St., Boston, plans completed by L. W. Ross, 20 Kilby S., Boston, 3½ story, 82x152 ft., brick, steel, limestone college bldg., economics, laboratory and classrooms, PE-6, $225,000. Financing not provided for. R. D. Kimball Co., 6 Beacon St., consult. engr. CD 6/19—ENR 7/13.

Mass., North Andover—City, 120 Main St., high school addn. $300,000. W. B. Duffy, engr.

Mass., Walpole—Norfolk Co. Agricultural School, Main St., plans by Cram & Ferguson, 248 Boylston St., Boston, 2 story, bsmt., brick, steel school, $150,000. Stone-Underhill Co., 78 Woodbine St., Quincy, consult. engr.

Mich., Clawson—City, 35 W. Clawson Rd., plans 5% completed by Lane, Davenport, Meyer, 306 Farwell Blvd., Detroit, brick, steel, concrete municipal bldg., civic center and fire station. $150,000.

New York—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, plans by I. Fenichel, 724 5 Ave., New York, garage for Dists. 76, 77, 78 and section station, Proj. S-50, Richmond Co., for Dpt. Sanitation. $357,000.

★**N. Y., Brooklyn**—Bd. Educ., 49 Flatbush Ave. exten., plans by H. V. Murphy, 1 Hanson Pl., P.S. 12, Adelphi St. and Myrtle Ave., Proj. E-121. $900,000. CD 3/4/43—ENR 3/18/43.

★**N. Y., Brooklyn**—Bd. Educ., 49 Flatbush Ave. Exten., plans by Skidmore, Owings & Merrill, 5 E. 57 St., New York, Zone 22, P.S. 249, vicinity Fenimore St. and New York Ave., $600,000. CD 1/29/43—ENR 2/4/43.

★**N. Y., Brooklyn**—Bd. Higher Educ., 695 Park Ave., New York, plans by H. O. Chapman & R. Evans, 140 Nassau St., New York, Zone 7, Brooklyn College Arts & Student Center bldg., incl. auditorium, HN4. $1,400,000. CD 6/17/43—ENR 6/24/43.

N. Y., Brooklyn—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, plans by M. W. Del Gaudio, 545 Fifth Ave., New York, Zone 17, 85th precinct station house, PO-30, for Police Dpt., 240 Centre St., New York. $185,000. CD 1/27—ENR 2/10.

★**N. Y., Brooklyn**—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, plans by G. A. Boehm, 2 W. 45 St., New York, Zone 19, staff house addns., alteration Greenpoint Hospital, for Dpt. Hospitals, 125 Worth St., New York. $1,450,000. CD 1/21—ENR 2/10.

★**N. Y., Brooklyn**—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, plans by Koch & Wagner, 32 Court St., Gravesend

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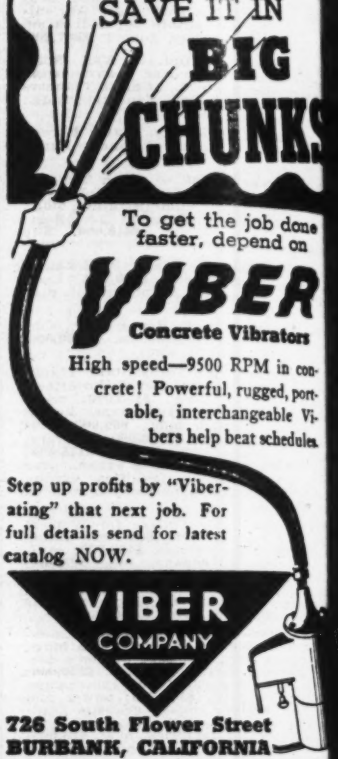

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WAR PROJECTS (Cont'd.)

Substation B, Ave. S and 16 St., $130,000; plans by E. D. Litchfield, Evarts, New York, Zone 22, Gravesend Center, HL-22, $290,000; plans by Murphy, 1 Hanson Pl., Zone 17, Health Center, HL-26, $290,000, Dpt. Health, 125 Worth St., New CD 1/21—ENR 2/10.

Y., Brooklyn—Dpt. P. Wks., Municipal New York, Zone 7, plans by Githens ity, 101 Park Ave., New York, Zone completing second story at Brooklyn Library, Proj. L-58. $300,000. CD —ENR 1/28/43.

Y., Irondequoit—Union Free School t. 3, Irondequoit, Junior-Senior High- $77,654. Legal obstacles to be over- C. Ada, Rochester, archt.

Y., New York—Bd. Higher Education, Park Ave., Zone 21, plans by Fell- & Wagner, 155 E. 42 St., functional of uptown campus and structures on Oval and remodeling present struc- City College, Proj. HN-35. $6,500,000.

Y., New York—Dpt. Markets & Dpt. Wks., Municipal Bldg., Zone 7, plans Hyland, 28-04-41 St., Long Island primary wholesale produce market on west side, Proj. M-4. $20,000,000.

Y., New York—Dpt. P. Wks., Munici- Bldg., Zone 7, plans by O'Connor & on, 101 Park Ave., Zone 17, alterations ding educational unit at Central Residence, Welfare Island, Proj. 41, for Dpt. of Hospitals, 125 Worth Zone 7. $500,000. CD 1/21—ENR 2/10.

Y., New York—Dpt. P. Wks., Munici- Bldg., Zone 7, plans by L. A. Abram- 25 W. 45 St., Zone 19, alterations, re- truction Pavilion F-G, I-K, L-M, Proj. 43, $750,000; plans by Chas. B. Meyers Clemson, Holmes & Converse, 31 Union Zone 3, power plant addns., both at rse Hospital, for Dpt. Hospitals, 125 th St. CD 1/29/43—ENR 2/4/43.

Y., New York—Dpt. P. Wks., Munici- Bldg., Zone 7, plans by Evans, Moore & Woldfarb, 101 Park Ave., Zone 17, Pre- Station House, Inwood Section, Proj. for Police Dpt., 240 Centre St., CD 1/29/43—ENR 2/4/43.

Y., New York—Dpt. P. Wks., Municipal Zone 7, plans by Wm. Lawrence ley, 545 Fifth Ave., Zone 17, precinct n house relieving 43 and 47th Precincts, for Police Dpt., 240 Centre St. $177,- CD 1/27—ENR 2/10.

Y., New York—Dpt. P. Wks., Municipal plans by M. B. Schmidt, 14 E. 46 St., 17, 15th precinct station house, PO-9, olice Dpt., 240 Centre St. $175,000. CD 43—ENR 2/4/43.

Y., Rhinebeck — Rhinebeck Central hool Dist., Rhinebeck, plans 60% com- by Moore & Hutchins, 11 E. 44 St., York, N. Y., school. $500,000. Financ- not provided for. F. Teal, Rhinebeck, CD 4/7—ENR 4/20.

Y., Watertown—City Bd. Educ., City all, plans 12% completed by W. P. ley, 96 Genesee St., Albany, Senior School, $310,000, financing not provided preliminary plans 5% completed by ng-Green & Bisonett, Trust Co. Bldg., tation, $40,000. CD 6/21—ENR 6/29.

, McKeesport—City, F. Buchanan, r. City Hall, plans by Schwab, Palm- & Associates, 600 Grand St., Pitts- , municipal bldg. $300,000.

L., Providence—State, Director Social re, State House, plans by Jackson, ton and Adams, 1215 Turks Head , 2 story, bsmnt., brick, stone clinical dministration bldg., at Children Study $150,000. Financing not provided for.

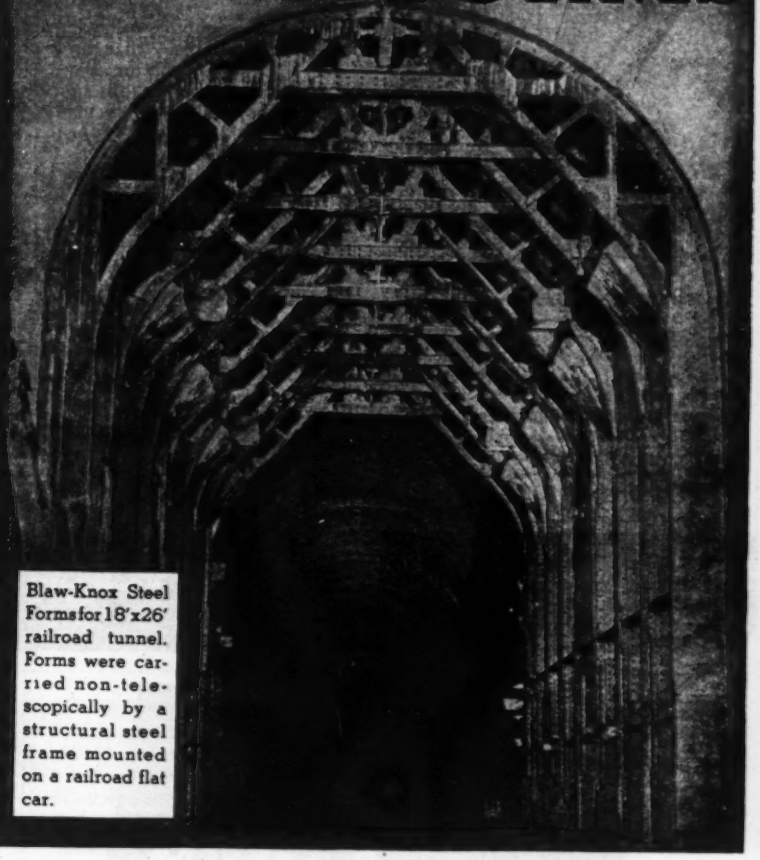
L., South Kingston—Town, Supt. hools, Town Hall, plans by E. O. Ek- 1616 Turks Head Bldg., Providence, 3 bsmnt., brick high school. $500,000.

x., Commerce—East Texas State Teach- s College, Commerce, plans by Geo. Southland Life Bldg. Annex, Dallas, al bldg. and allied facilities, $150,000; nts union bldg., $200,000; class in- tion bldg., $150,000; rein.-con. swim- pool, $25,000; gymnasium, $60,000; te, steel, athletic stadium, $50,000; and steam plant unit, $60,000; stor- warehouses, $60,000. CD 10/11—ENR

x., Corpus Christi—City, municipal uditorium, $375,000; armory and defense for Texas State Guard, over $200,000; hall, $175,000; police station, $150,000. cCormick, City Hall, engr.

x., Houston—University of Houston, 1 St. Bernard St., plans 5% com- by L. Q. Cato, W. Gray St., and A. C. consult. archt. Bankers Mtg. Bldg., e bldg., over $150,000; men's dormi- over $150,000; women's dormitory, $150,000; mechanical and vocational bldg., $60,000 or more; students bldg., $150,000; administration and classroom over $150,000; plans sanitary sewer ns, over $25,000; water facilities, over . CD 5/22—ENR 6/1.

BLAW-KNOX STEEL FORMS



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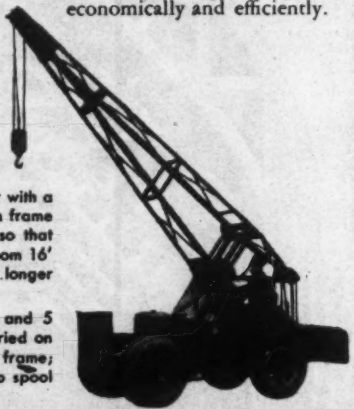

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POSTWAR PROJECTS (cont'd.)

★**Alta., Edmonton** — ...city, power p... addn. $1,250,000. ... W. Haddon, owner, engr. CD 9/20—...R 10/5.

Ont., Ottawa—City, civic centres in var... locations, $250,000; asphalt plant, $10... civic garage, $100,000. ... C. Askwith, owner, engr.

READY FOR BIDS.

★**N. Y., New York**—Bd. Educ., 49 F... bush Ave. Exten., Brooklyn, Zone ... plans completed 3 story exten. to Bo... Vocational High School for Boys, 2... 151 St. $675,000. E. Kebbon, c/o ow... engr. CD 1/13—ENR 1/27.

★**N. Y., New York**—Bd. Educ., 49 Flatb... Ave. Exten., Brooklyn, Zone 1, p... completed 3 story, West Side Vocatio... School, Columbus Ave. and 108 St. $1,2... 000. E. Kebbon, c/o owner, engr. CD ... —ENR 1/27.

★**N. Y., New York**—Dpt. P. Wks., Mu... ipal Bldg., Zone 7, plans completed ... Moore & Hutchins and P. Goodman, 1... 44 St., Zone 17, 3 story, bsmnt. bldg. ... use as laundry, garage and firehouse ... 247 x 496 ft. plot, Welfare Island, for ... Hospitals, 125 Worth St., $950,000. ... 1/29/43—ENR 2/4/43.

Tex., Denton—State College for Wo... Denton, plans completed by P. M. Ge... 806½ Burnet St., Fort Worth, h... economics bldg. $385,000.

CONTRACTS AWARDED

Va., Capron—State, Richmond, do... tories, $103,000; shop bldg., $50,000, ... Southampton Penitentiary Farm, Cap... own forces. Funds appropriated.

COMMERCIAL BUILDINGS

PROPOSED WORK

★**Calif., Hollywood** — Paramount Pict... Inc., 5451 Marathon St., rehabilitat... alteration, new sound stages. $4,000,000-$... 000,000.

★**Calif., Los Angeles**—Monogram Pict... Corp., 4376 Sunset Dr., studio imp... $1,000,000.

★**Calif., Los Angeles**—R.K.O. Radio P... tures, Inc., 780 N. Gower St., st... imprvs. $1,000,000.

★**Calif., Los Angeles**—20th Century ... Film Corp., 1021 W. Pico Blvd., reha... itation, alteration and new sound sta... projection rooms, editing rooms. $3,500,...

★**Calif., Los Angeles**—Universal Pict... Co., Inc., Universal City, 20 new s... stages $5,000,000.

Ill., Danville—Central Christian Chu... 1032 North Walnut St., brick church, Eng... and Vermilion St. $150,000.

Minn., Minneapolis—Milner Hotel, E. ... Lagerstrom, mgr., 400-410 Nicollet Ave., ... modeling 5 story, brick hotel, $150,000.

N. Y., Dunkirk—Owners, c/o J. J. O'Ha... mgr., Dunkirk, hotel, Central Ave. $150,... $200,000.

Ore., Salem—Willamette University, Sa... male students residences. $321,000.

★**Pa., Doylestown**—National Farm Sch... Doylestown, school bldgs., ad... $1,000,000.

R. I., Providence—Providence Lying... Hospital, Dr. H. P. B. Jordon, supt., 50 Ma... St., brick, steel surgical hospital unit ... women, Pleasant Valley Pkwy. Over $1... 000. Land acquired.

Tex., Dallas—Oak Cliff Bank & Trust ... 250 W. Jefferson St., bank unit. Over $1... 000. Site purchased.

Tex., El Paso—Radford School for G... L. de L. Templer, pres., dining hall, $1... 000.

★**Tex., Fort Worth**—Texas Christian U... versity, Fort Worth, fine arts bldg. ... auditorium, $225,000; science hall, $175,0... remodeling, reconditioning 5 bldgs., ... $150,000; administration bldg., $200,0... field house, $45,000; remodeling large adm... istration bldg. for student union bld... sanitary sewer facilities, over $25,000; exp... imprv. water facilities, over $15,000.

★**Tex., Marshall**—East Texas Baptist C... lege, Marshall, dining hall and kitch... hollow tile, brick veneer, concrete dor... tories, $250,000; science bldg., $175,0... chapel, $150,000; music hall, $175,000; libr... $150,000; campus grounds drainage, deve... ing, plotting, paving, athletic fields, ... $25,000; sanitary sewerage sys. expan., ... $25,000; water facilities expan., over $15,... CD 2/10/43—ENR 2/24/43.

Tex., San Antonio—St. Gerard Chu... 1617 Iowa St., Junior-Senior High Sch... S. New Braunfels and Nevada Sts. $100,... $150,000. Site purchased.

★**Alta., Calgary**—Calgary General Hos... Bd., A. D. Cumming, chn., 800-bed h... pital, $2,000,000. J. Barnes, c/o ow... supt.

★**Ont., Hamilton**—The Famous Pla... Canadian Corp., Ltd., 28 James St., ... theatre, 2,000 seating capacity. About $... 000-$500,000.

WAR PROJECTS (Cont'd.)

...Montreal—Statler Hotel Corp., ...Hotel Pennsylvania, New York, N. Y., ...in New Central Station vicinity. About ...,000.

...S UNDER WAY

...Southington — Bradley Hospital, ...Elm Ave., plans by W. Wilkins, 648 ...St., Hartford, brick, steel hospital ...gists., Meriden Ave. $250,000. CD 8/23 ...8/7.

...Chicago—Chicago Tribune Co., 435 ...Michigan Ave., plans under way by L. ...Eisenborn, 435 N. Michigan Ave., 12 ...brick, concrete, steel radio theatre. ...,000.

...Baltimore — Owner, c/o F. L. W. ...ole & Assoc., archt., 330 N. Charles St., ...minary plans underway, shopping cen- ...$150,000.

...Watertown—Owner, c/o Ed. B. Stat- ...archt., 63 Broad St., Boston, plans ...way 33 single family wood frame resi- ...$250,000. Land rights not cleared ...financing not provided for.

...Grand Rapids—Carmelite Sisters, ...Walker St. N.W., Grand Rapids, ...hes approved by E. Brielmaier & Sons ...715 N. Water St., Milwaukee 2, Wis. old ...home. $250,000.

...Brainerd—Benedictine Sisters Be- ...ial Assn. of Duluth, Sister Dolorosa, ...St. Joseph Hospital, Brainerd, plans by ...O'Meara & Associates, 4908 Delmar ...St. Louis, Mo., 4 story, bsmnt. bldg., ...Joseph Hospital, incl. new power plant. ...$500,000. CD 5/4—ENR 5/18.

...St. Louis—May Department Stores ...Co., M. J. May, pres., c/o Famous-Barr ...401 Olive St., Zone 1, preliminary plans ...pleted by W. Levy, Railway Exchange ...4 and Olive St., Zone 1, 2 story, bsmnt., ...con., brick, stone department store, ...rthe Blvd. near Jackson Ave., University ...St. Louis, Zone 6, $1,250,000; 2 story, ...nt. department store, Chippewa St. and ...ighway Blvd., Zone 9, approx. $1,200,- ...1 story, bsmnt. department store, Nat- ...Bridge Ave. and Kingshighway Blvd., ...,000; imprv. department store occupy- ...12¼ floors of Railway Exchange Bldg., ...d 7, Olive to Locust Sts., incl. new light- ...sys. addnl. escalators, cold storage vault ...ture, modern treatment of entire first ...facade, etc., $3,250,000; 7 story, bsmnt., ...rein-con. warehouse addn., Market St. ...Spring Ave., $750,000; 5 story patrons ...ge, incl. 2 floors below street level and ...ories above, 4 and Pine Sts., incl. demoli- ...existing bldgs., $375,000. Sites pur- ...ed.

...r., Las Vegas—Owner, c/o Wurdeman ...ckst. archts., 6536 Sunset Blvd., Holly- ...d, Calif., hotel group of bldgs., etc. Over ...,000.

...Y., New York — Syndicate, S. D. ...Leidesdorf, pres., c/o E. J. Kahn, archt., ...rk Ave., Zone 16, 30 story office bldg., ...140 x 200 x 250 ft. plot, 100-112 Park ... $7,500,000.

...0., Cleveland—Mt. Sinai Hospital, Dr. ...H. L. Rockwell, supt., 1800 E. 105 St., ...s by G. B. Mayer, Schofield Bldg., hospi- ...addns., incl. maternity pavilion labora- ...surgical unit, enlarging dietary dept., ...$1,000,000. Financing not provided for.

... Cleveland—St. Philip's Neri Catholic ...rch, Rev. James P. Brennon, pastor, ...St. Clair Ave., plans 25% completed by ...Wm. Koehl, Lee and Mayfield Rds., ...eland Heights, brick, steel, concrete ...rch. $150,000. Financing not provided

... Cleveland—St. Rocco's Catholic Church, ...S. Gattuso, pastor, 3205 Fulton Rd., ...ches by S. Bochkor, 613 E. 99 St., 2 ...k, steel, concrete churches. $300,000. ...ancing not provided for.

... Euclid—Wilbur Wilson Merkel, River ... Gates Mills, plans 75% completed by ...ent & Payer, Penny Bldg., Chagrin ...s. 1 story, bsmnt., 120x515 ft., and 50x237 ...concrete block, with Indiana limestone ...ping center. $400,000.

...a., Tulsa—Hillcrest Memorial Hospital, ...E. 12 St., plans 75% completed by L. B. ...er, 306 Philtower Bldg., nurses' home. ...,744.

...x., Austin—Austin Presbyterian Theo- ...al Seminary, 100 W. 27 St., plans 10% ...pleted by M. Eichenroht, 511 Maverick ...t., San Antonio, brick, concrete gothic ...library and administration bldg. Est. ...,000.

...x., Houston—Christ Episcopal Church, ...Texas St., plans 25% completed by M. J. ...rvan, 3901 Travis St., and L. M. Wirtz, ...Stuart St., assoc. archt., educational ... $150,000.

...Tex., Plainview—Wayland Baptist Col- ...lege, Plainview, plans 5% completed ...dormitory $150,000, boys dormitory ...,000, science bldg. $150,000, Fine Arts ...$150,000, chapel-library bldg. $100,000- ...,000, agriculture and storage bldg. $80,- ...plans grounds development, landscap- ...drainage, leveling, athletic field, etc. ...,000, Kerr & Kerr, archts., and H. Walsh, ...c. archt., both Amarillo; plans addnl. ...r facilities, addnl. sanitary sewer lines, ...ities, over $25,000; steam heating plant ... $40,000.

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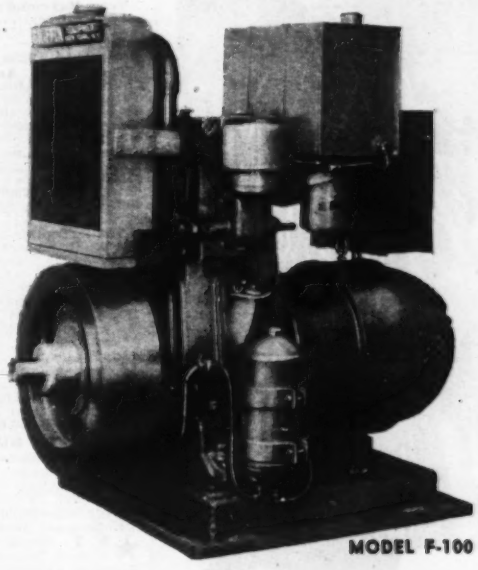

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POSTWAR PROJECTS (Cont'd.)

Tex., Raymondville—W. W. Ely & Associates, Brownsville, plans 10% completed by Hedrick & Fox, Corpus Christi, engrs. and archts., 6 story, rein.-con., brick hotel and stores bldg. **$200,000.**

Tex., San Antonio — Christ Lutheran Church, 301 Abiso St., Alamo Heights, San Antonio, plans by H. Steinbomer, 912 Travis Bldg., masonry church, parsonage and parish house. Primrose and Broadway. **$150,000.** Site purchased. CD 3/16—ENR 4/6.

Tex., Sherman—Austin College, Sherman, plans 15% completed, administration bldg., **$150,000,** funds available; plans women's dormitory, **$175,000;** Fine Arts bldg., **$150,000.** R. Rolfe, Sherman, college archt. CD 12/22—ENR 1/13.

Tex., Temple—Temple Memorial Comn., c/o W. R. Humphrey, Temple, plans by A. B. Dow, 2209 Commerce Bldg., Houston, museum and archive bldg. **$250,000.** CD 8/23—ENR 9/7.

Wis., Milwaukee—St. Benedict the Moor Mission, 1022 W. 10 St. plans by E. Brielmaier & Sons Co., 735 N. Water St., Zone 2, will double original plan for hospital addn. **$400,000.**

★**Que., Montreal**—Windsor Hotel Co., Peel St., J. A. Raymond, pres., plans by D. Shennan, Canada Cement Bldg., 20 story hotel addn., and 2 story exten. on Dorchester St. side. **$6,000,000-$7,000,000.**

READY FOR BIDS.

Conn., Stamford—St. Clement's Roman Catholic Parish, J. J. Foley, pastor, 535 Fairfield Ave., plans completed by A. DePace, 151 W. 46 St., New York, N. Y., church superstructure on old fdn., air conditioned, 600 person capacity. **$150,000.**

★**N. Y., Brooklyn**—Abraham & Straus, 420 Fulton St., plans completed 6 story, 2 bsmnts., 100x300 ft. department store. **$3,500,000.** R. I. Land, c/o owner, engr.

★**N. Y., Jamaica**—Jamat, Inc., 12 E. 41 St., Zone 17, plans completed by R. D. Kahn, 56 W. 45 St., Zone 19, New York, 1 story store, 89 Ave. between 164 and 165 Sts. **$1,000,000.**

★**N. Y., New York**—Cannon Constr. Co., 521 Fifth Ave., Zone 17, plans completed by G. G. Miller., 67 W. 44 St., Zone 18, 10 story, 100x161 ft. apartment, 7 Ave. and 19 St. **$650,000.** CD 9/7—ENR 9/21.

N. Y., New York—Ceri Realty Co., 11 Cooper St., Zone 34, plans completed by Geo. A. Bagge, 25 E. 193 St., Zone 58, 6 story apartment, 671-681 Academy St. **$350,000.**

★**N. Y., New York**—City Investment Co., R. W. Dowling, pres., 30 Broad St., Zone 4, plans completed by Walker & Gillette, 19 E. 53 St., Zone 22, 11 story, penthouse apartment, 26-32 E. 37 St. **$500,000.**

N. Y., New York—East River Savings Bank, 26 Courtlandt St., Zone 7, plans completed by E. Palmer, 624 Madison Ave., Zone 22, 6 story apartment, 3 Ave. and 27 St. **$240,000.**

N. Y., New York—37 St. Constr. Corp., E. J. Schwabach, pres., c/o J. Lau, archt., 5 Beekman St., Zone 7, plans completed 12 story apartment, 5-17 W. 37 St. **$450,000.**

★**N. Y., New York**—Evelyd Bldg. Corp., 1947 Bway., Zone 23, plans completed by H. Ginsbern, 205 E. 42 St., Zone 17, 10 story apartment, 202-208 W. 96 St. **$500,000.**

N. Y., New York—Evelyd Bldg., Corp., 1947 Bway., Zone 23, plans completed by H. Ginsbern, 205 E. 42 St., Zone 17, 6 story apartment, 203 W. 95 St. **$250,000.**

N. Y., New York—Federation Bank & Trust Co., 34 St. and 3 Ave., Zone 1, plans completed by H. I. Feldman, 415 Lexington Ave., Zone 17, 8 story, penthouse apartment, 443-51 W. 34 St. **$350,000.**

N. Y., New York—43 East 25 St. Corp., 143 W 49 St., Zone 19, plans completed by H. I. Feldman, 415 Lexington Ave., Zone 17, 8 story apartment, 43-51 E. 25 St., **$275,000.**

N. Y., New York—G. & W. Bldg. Corp., 415 Lexington Ave., Zone 17, plans completed by H. I. Feldman, 415 Lexington Ave., Zone 17, 8 story, penthouse apartment, 155 W. 81 St. **$175,000.**

★**N. Y., New York**—Gerry Estates, Inc., 270 Bway., Zone 7, plans completed by J. B. Snook Sons—V. C. Farrar, 299 Bway., Zone 7, 45 story office bldg., 110-23 Broad St. **$1,750,000.**

N. Y., New York—S. Leibman, 25 Cooper St., plans completed by A. Goldhammer, 6 Varick St., Zone 13, 6 story apartment, 212 St. and Tenth Ave. **$210,000.**

N. Y., New York—Level Realty Corp., 384 E. 149 St., Zone 55 plans completed by Starrett & Van Vleck, 267 Fifth Ave., Zone 1, 4 story, 100x100 ft., brick store bldg., Grand Concourse and Fordham Rd., for Alexander Dpt. Stores, Inc., lessee. **$350,000.**

★**N. Y., New York**—News Syndicate Co., 220 E. 42 St., Zone 17, plans completed by Harrison, Fouilhoux & Abramowitz, 45 Rockefeller Plaza, Zone 20, 24 story exten. to The Daily News Bldg. **$2,000,000.**

N. Y., New York—120 Estate, Inc., M. Glickman, vice pres., c/o S. Walter Katz, 527 Fifth Ave., Zone 17, plans completed 10 story apartment, 27-29 E. 13 St. **$345,000.**

N. Y., New York—Rock Ledge Apts., Inc., S. Strom, pres., 340 Riverside Dr., Zone 25, plans completed by H. H. Lilien, 2095 Bway., Zone 24, 11 story apartment, 314-22 W. 76 St. **$450,000.** CD 5/10—ENR 5/18.

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...TWAR PROJECTS (Cont'd.)

...Y. New York—42nd Corp., 305 Bway., ...ts 1, plans completed by H. Ginsbern, ...E. 42 St., Zone 17, 10 story apartment. ...E. 42 St. $300,000.

...Y., New York—State Dpt. Insurance, ...Albany, plans completed by R. T. Lyons. ...owner. 16 story apartment, 153-69 ...outh Ave. $1,750,000.

...Y. N. Y.—Tiflock Realty Corp., L. J. ...riart, pres., 17 E. 42 St., Zone 17, plans ...pleted by W. J. Minogue, 17 E. 42 St., ...ne 17, 6 story, 86x94 ft. apartment, River- ...de Ave. and 180 St. $150,000.

...Y. New York—Tupton Associates, 570 ...d Ave., Zone 17, plans completed by H. ...nbern, 305 E. 42 St., Zone 17, 6 story ...artment, 122 E. 63 St. $300,000.

...NTRACTS AWARDED

...Mass., Boston—Ford Hotels Co., c/o con- ...tractor, 1,000 room brick, steel hotel, ...George W. Harvey Constr. Co., 63 Broad ...Est. $2,500,000.

...Mass., Watertown—E. A. Bianco, 63 Broad ...Boston, 35 frame, single family dwell- ...Owner builds. $200,000. E. B. Strat- ...63 Broad St., Boston, archt. CD 9/20— ...BR 10/5.

...OJECTS CANCELLED.

...Tex., Dallas — W. W. Caruth, Jr., 1215 ...ain St., cancelled construction shopping ...ter, off Mockingbird Lane, $150,000. CD ...21—ENR 9/7.

INDUSTRIAL BUILDINGS

...OPOSED WORK

...Ky., Louisville — GRAIN ELEVATOR — ...diana Grain Co-Operative, 1340 Ormsby ...e, concrete, steel milllion bushel elevator ...Ohio River at Preston and Ohio Sts., to ...nsfer grain from river barges.

...Mo., St. Louis—WAREHOUSE—Station ...(Warehouse Co., F. Brittan, pres., 120 ...uth Ninth St., Zone 2, 500x500 ft., ware- ...use, cold storage plant and office bldg., ...nching tracks, small bldgs. with loading ...atforms, 150 car garage, etc. $750,000 plus ...ch equip. Site purchased.

...New Jersey—GENERATING PLANT, etc. ...—Pub. Service Gas & Electric Co., 80 ...ark Pl., Newark, generating plant and ...wer house, $10,000,000. Site undecided. ...nd rights not cleared.

...N. J., Bayonne—LAUNDRY—Community ...ide Laundry, J. M. Elder, pres., 701 Bway., ...undry, 16 W. 33 St. Over $40,000. Land ...quired.

...A., Warren — PLANT BLDG. — General ...Motors Corp., General Motors Bldg., De- ...it, Mich., 4 story general and personnel ...ms and enlarged cafeteria, $1,000,000.

...Tex., Dallas—BOTTLING, etc.—Dr. Pepper ...429 2 St., bottling plant and office, Green- ...le Ave. and Mockingbird Lane.

...Tex., Giddings—PLANT—Fairmont Cream- ...y Co., Giddings, creamery plant, $100,000.

...B. C., Kamloops—PLANT, etc.—B. C. ...ectric Ry. Co., Vancouver, exten. gas mfg. ...nt and distr. lines. $150,000.

...Ont., St. Catherines — PLANT — Anthes ...undry, Ltd., 30 Jefferson St., Toronto, re- ...delling Imperial Iron Corp., Ltd., plant ...d addnl. equip. $70,000.

...Ont., St. Catherines—PLANT—McKinnon ...Industries, Ltd., St. Catherines, plant ...in. $2,500,000.

...Ont., Sault Ste. Marie—PLANT—Filer ...ay Co., Inc., c/o W. S. Maguire, paper ...p plant, $50,000.

...Ont., Toronto—PLANT—Fyron Ceramics, ..., 601 Merton St., plant producing highly ...ed clayware. $40,000.

...Que., Hull—PLANT—Mica Co. of Canada, ...Hull, plant mfg. insulating varnishes. ...,000.

...ANS UNDER WAY

...Conn., East Hartford—FACTORY—East ...rtford Tanning Co., c/o W. Wilkins, ...ct., 648 Asylum St., Hartford, brick fac- ...y. $40,000.

...Mass., Lynn — PLANT — Friend Brothers ...Co., 597 Main St., Melrose, plans by W. A. ...eman, 31 Cornhill, Boston, 1 story, ...k, steel plant addn., alterations. Over ...,000.

...Wis., Richland Center—PLANT—Western ...dressing Co., 935 E. John St., plans com- ...ted by Orbison & Orbison, 206 W. College ...., Appleton, 3 bldgs. for milk plant. ...al obstacles to be overcome.

...Alta., Edmonton—RAILWAY STATION ...—Canadian Pacific Ry. Co., J. E. Arm- ...ng, ch. engr., Windsor Station, Montreal, ..., union railway station. $2,000,000.

...Que., Plessisville — PLANT — Plessisville ...ndry, Plessisville, 2 story, 50x140 ft. brick ...t bldg. replacing old plant. $40,000. ...Duncause, Plessisville, engr.

...NTRACTS AWARDED

...Y., Frankfort—PLANT—Acme Road ...hinery Co., Frankfort, expan. mfg. plant, ...forces. D. B. Cook, c/o owner, engr.

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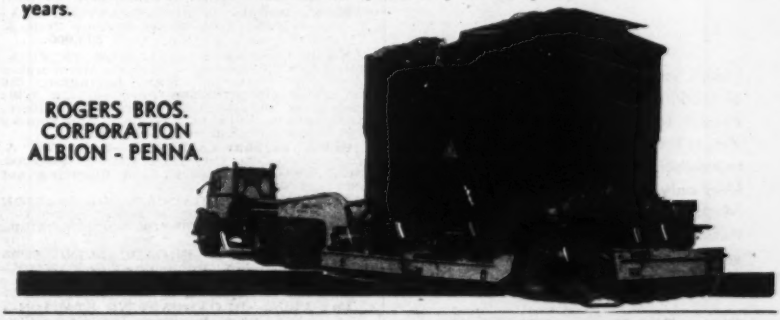

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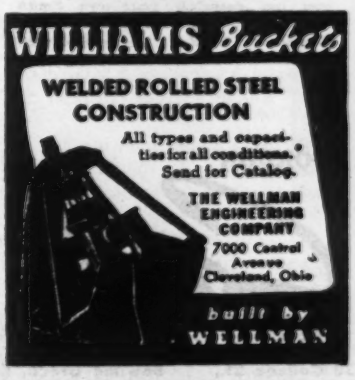

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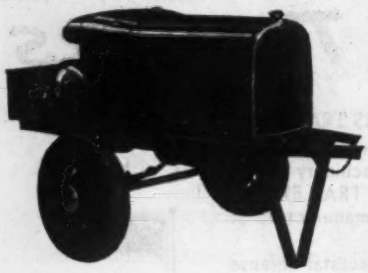

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PROPOSED WORK

Calif., Alameda—BROADCASTING STATION—Times Star Publishing Co., Alameda, FM broadcasting station. Over **$25,000.**

Calif., Los Angeles — BROADCASTING STATION—Blue Network Co., 6285 Sunset Blvd., Hollywood, FM broadcasting station. Over **$25,000.**

Conn., Rowayton—PARK DEVELOPMENT—Rowayton Civic Assn., F. P. Dunn, Rowayton Ave., park development, Neville Bayley Park. **$25,000.**

Ill., Springfield — STADIUM AND ATHLETIC FIELD—Bd. Educ., 200 E. Adams St., **$360,000** bond election in November, stadium and athletic field, possibly at Lanphier Field.

Ill., Urbana—BATHHOUSE—Urbana Park Dist., Urbana, new bathhouse, **$40,000.**

Me., Portland—WATERFRONT IMPROVMENTS—City, Wm. S. Newell, dir. Port Auth., waterfront imprvs., incl. wharves, warehouses and fish pier, **$80,000.**

Me., Portland — BROADCASTING STATION—Gannett Pub. Co., 177 Federal St., FM broadcasting station. Over **$25,000.**

Mass., Boston—BROADCASTING EXPANSION—Westinghouse Radio Stations, Hotel Bradford, broadcasting expansion, television facilities for Station WBZ, **$200,000.**

Mich., Benton Harbor—BROADCASTING STATION — Palladium Pub. Co., Benton Harbor, FM broadcasting station. Over **$25,000.**

Mich., Pontiac — AIRPORT — City, J. M. Mudie, mgr., Pontiac Municipal Airport imprvs. **$300,000.**

Nev., Las Vegas—BROADCASTING STATION—Nevada Broadcasting Co. (KENO), Box 1310, FM broadcasting station. Over **$25,000.**

New Hampshire—LANDSCAPING WORK—State Hy. Dpt., State House, landscaping work along 6.9 mi. hy., at Bethlehem and Franconia, **$25,000.**

★**N. H., Hartford-Lebanon**—POWER DEVELOPMENT — Bellows Falls Hydro-Electric Corp., A. E. LaCroix, vice pres., Bellows Falls, Vt., 590 ft. concrete gravity dam, 60 ft. high with earth embankments, power plant, on Connecticut River, 37,500 KVA transformer bank, redevelopment Wilder Dam creating pond 47 ft. long. **$7,640,700.**

New York—PARK DEVELOPMENT—Dpt. P. Wks., State Office Bldg., Albany, Zone 1, developing park on Bulkhorn Island, for Dpt. Conservation, Albany. **$174,000.**

New York—POND DEVELOPMENT—Dpt. P. Wks., State Office Mldg., Albany, Zone 1, state wide pond development for Div. Fish & Game, Conservation Dpt., Albany. **$72,000.**

N. Y., Buffalo — BROADCASTING STATION—WBEN, Inc., Hotel Statler, Zone 5, FM broadcasting station. Over **$25,000.**

North Carolina—RURAL ELECTRIFICATION LINES—Davidson Electric Membership Corp., W. Patterson, mgr., Lexington, 300 mi. rural electrification lines serving 1,000 customers in Davidson, Forsyth, Guilford, Rockingham, Stokes, Davie, Montgomery and Randolph Counties. **$300,000.**

Okla., Sulphur—AIRPORT—City, W. A. Emerson, mayor, City Hall, airport. **$100,000.** Land rights not cleared and financing not provided for.

Okla., Tulsa—BROADCASTING STATION—World Publishing Co., & Tulsa Tribune Co., 317 S. Boulder Ave., FM broadcasting station. Over **$25,000.**

Ore., Portland — BROADCASTING STATION—Oregonian Publishing Co. (KGW), Oregonian Bldg., Zone 5, FM broadcasting station. Over **$25,000.**

Pa., Phila.—BROADCASTING STATION—The Philadelphia Inquirer, Inquirer Bldg., FM broadcasting station. Over **$25,000.**

Pa., Phoenixville — AIRPORT — Phoenixville-Royersford-Spring City Airport Com., G. M. Andres, chm., 405 Bridge St., surveying site for airport.

Pa., Scranton—BROADCASTING STATION—Scranton Broadcasters, Inc., (WGBI), 1000 Wyoming Ave., Zone 9, FM broadcasting station. Over **$25,000.**

Pa., Uniontown — BROADCASTING STATION—Fayette Broadcasting Co. (WMBS), Fayette Title & Trust Bldg., FM broadcasting station. Over **$25,000.**

Pa., Williamsport—BROADCASTING STATION—WRAK, Inc., 244 W. 4 St., FM broadcasting station. Over **$25,000.**

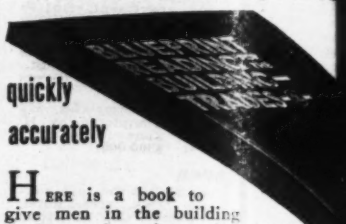
R. I., Pawtucket—BROADCASTING STATION—Pawtucket Broadcasting Co. (WFCI), 450 Main St., FM broadcasting station. Over **$25,000.**

S. C., Greenville—BROADCASTING STATION—Greenville News-Piedmont Co., Greenville, FM broadcasting station. Over **$25,000.**

Tex., Abilene—BROADCASTING STATION—The Reporter Broadcasting Co., (KRBC), Hilton Hotel, Abilene, FM broadcasting station. Over **$25,000.**

Tex., Dallas—BROADCASTING STATION—KRLD Radio Corp., Hotel Adolphus, Dallas, FM broadcasting station. Over **$25,000.**

Read building blueprints



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Frame House Basement Plan
Wooden Frame House Plan
Frame House Elevations
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POSTWAR PROJECTS (Cont'd.)

...t, Harlingen—BROADCASTING SYSTEM ...rbenito Broadcasting Co. (KGBS), Box ... FM broadcasting system. Over $25,000.

...r, Houston — TUNNEL, etc. — Harris ... and Harris Co. Navigation Dist., ...thouse, tunnel construction at Pasadena ... Morgans Point in Ship Channel, $1,250,- ... rebuilding Dock 2, incl. double-deck ... terminal, $400,000; dock for deep- ... boats, $450,000; imprv. on south side ... apron, fender, railway extens., etc., ... Bond election Nov. 7. CD 3/26/43 ... 4/1/43.

...r, Mineral Wells—PARK—Texas State ...Park Bd., Austin, developing 6,869 acre ... in vicinity of Possum Kingdom Dam ...public park sys. $1,000,000.

...r, Plainview—AIRPORT—City, airport ...ways, taxiways, parking area, completed ...nds development, $225,000; administra- ...bldg., shop, hangars, etc., $175,000.

...h, Westport—FISHING BASE—Port ...ways Harbor, Aberdeen, fishing base ...ties. $60,000.

...s, Racine—BROADCASTING STATION ...ine Broadcasting Corp. (WRJN), 441 ... St., FM broadcasting station. Over ...,000.

...s, Stoughton—AIRPORT—City, airport. ...,000

...s, Vermilion—GAS DISTRIBUTION ...SYSTEM—Northern Natural Gas Co., ... Vermilion, gas distr. sys. $1,000,000

...n, Morden—PARK DEVELOPMENT— ...cipality, park and picnic grounds, skat- ... rink, tennis and baseball courts, me- ...rial park. $75,000.

...e, St. Ambroise—FIRE PROTECTION ...STEM—Municipality, A. E. Asselin, secy., ... Hall, complete fire protection sys. ...,000.

...NS UNDER WAY

...f., San Jose—AIRPORT, etc.—City, ...City Hall, airport development, $600,000; ...ral fire alarm sys., $500,000; William ...park development, $50,000; Willow Glen ...t purchase and development, $100,000; ...e Park recreational area, $55,000; ...n Rock Park Rd., $150,000; Alum Rock ...-lower area development, $176,000; mu- ...al golf course and club house, $105,000. ...elvin Pollard, City Hall, city planning ... CD 10/6/43—ENR 10/14/43.

...ons., Hartford — PARK IMPROVE- ...MENTS—City, Bd. Park Comrs., Munici- ...Bldg., exten. Bushnall Park, incl. terri- ...to Main St. $925,000. R. J. Ross, city ...

...s, Thomasville—PARKS—City, City Hall, ...y parks. $100,000. Wiedeman & Single- ...Candler Bldg., Atlanta, consult. engrs. ... Layton, Thomasville, city engr.

...s, Danville—STREET LIGHTING—City, ...Wilson, mayor, City Hall, repairing old ...installing new lighting in business dist., ...lights on Main from Logan to Park and ...Vermilion from Main to Fairchild. $25,- ... F. Roseman, city engr.

...s, Danville — BEACH HOUSES, etc. — ...ville Park Dist., Danville, plans election ...pril to vote on new park district cover- ...150 sq. miles, incl. beach house and ...r park developments, $100,000. F. Rose- ..., city engr.

...s, Decatur—PARK IMPROVEMENTS— ...tur Park Dist., L. Chandler, supt., De- ...r Club Bldg., plans completed road sur- ...$17,500; bituminous road, concrete curb ... gutter, $15,000; plans 50% completed ...e farm, $10,000, all in Faries Park. ...ncing not provided for.

...s, Edwardsville—AIRPORT—Madison ...o., c/o County Bd. Supervs., Edwards- ...and Madison-St. Clair Counties Com. ...Aviation Planning, c/o F. C. Parks, ...prvs. Parks Air College, Parks Airport, ...St. Louis, plans under way Class 4 air- ...at Sand Prairie east of Horseshoe Lake ...Madison Co., incl. 1,500 ft. north-south ...ay, 5,200 ft. northeast-southwest run- ...and 5,000 ft. northwest-southeast run- ...designed for exten. to 15,000 ft. later, ...ngs, lighting facilities, administration ..., etc., $1,980,000-$2,150,000. N. Bird, ...gr. Illinois Aeronautics Comn., Spring- ...consult. engr. CD 9/29—ENR 10/19.

...s, Urbana — STREET LIGHTING — City, ...Hall, G. Hurd, mayor, south east orna- ...al lights, $58,000; northeast ornamental ..., $6,000. J. M. Kinch, acting city engr.

...s, Cedar Rapids—AIRPORT BLDGS.— ...M. N. Krebs, clk., City Hall, hangars ...ldgs., at airport, $236,000. F. E. Young, ...ngr.

...s, Cedar Rapids—PARK IMPROVE- ...TS—City, M. E. Krebs, clk., City Hall, ...imprvs. $267,000. F. E. Young, city ...

...d, Baltimore—PIER—Baltimore Port ...velopment Comn., foot of Bway., plans ...way concrete pier on concrete piles, ...storage sheds and conveyor belt sys. ...e of proposed National Gypsum Co. ..., $900,000. Hall, Turpin & Wachter, ...est Chase St., consult. engr. CD 7/28— ...1/10.

...s, Brimfield—PARK, etc.—Common- ...th of Massachusetts, Dpt. Conservation, ...hburton Pl., Boston, park and recrea- ...extens., imprvs., incl. bldgs., Skinner ...Robinson Parks, $75,000. R. M. Sizer, ...n St., Westfield, archt.

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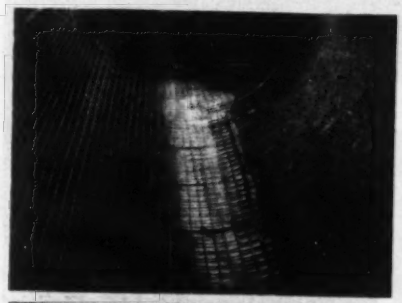

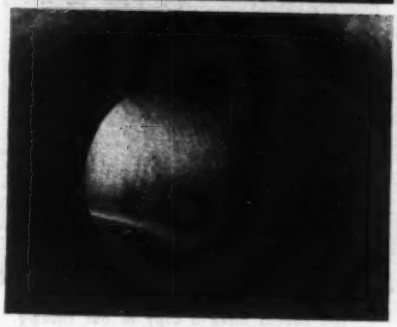

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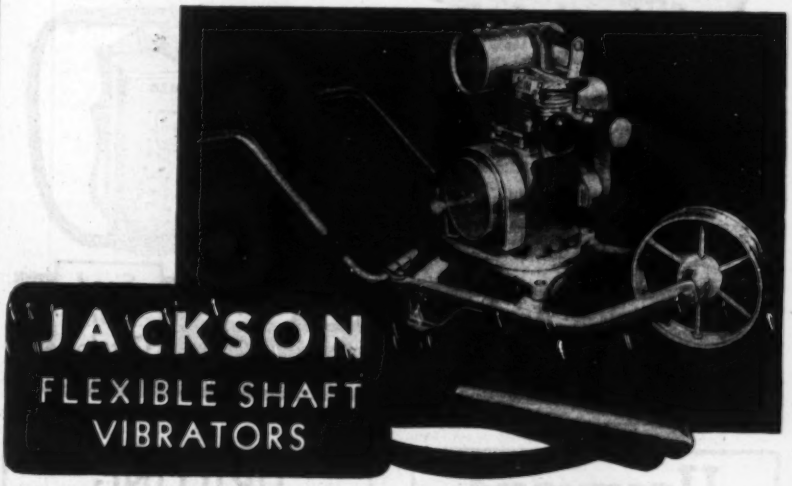

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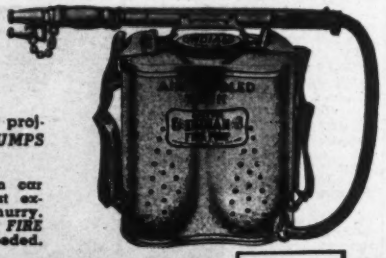

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POSTWAR PROJECTS (Cont'd.)

Mass., Upton-Douglas-Spencer — FOREST IMPROVEMENTS—Commonwealth of Massachusetts, Dpt. Conservation, 15 Ashburton Pl., Boston, recreation facilities, bldgs., etc. **Massachusetts State Forest, PF-5, Dist. $55,000.** R. Gariand, 101 Holman St., Shrewsbury, archt.

★**Mich., Detroit**—ELECTRIC SERVICE—Pub. Lighting Comn., 174 E. Atwater St., plans under way electric service to Douglas Housing, exten. municipal sys., $200,000; electric service exten. to Wayne University and Medical Center, $250,000; miscellaneous service extens. for municipal lighting sys., $400,000; electric service exten. to Douglas Housing, **$250,000.** G. R. Thompson, City Hall, city engr.

Mich., Grosse Pointe Farms—PIER, etc.—Village, 90 Kirby Rd., pier and boat harbor for small craft, approx. $150,000. M. T. Smith, 90 Kirby Rd., engr.

★**N. Y., Brooklyn** — BATHHOUSE — Dpt. Parks, Arsenal Bldg., Central Park, W. 64 St. and Fifth Ave., New York, Zone 21, plans by Eggers & Higgins, 542 5 Ave., New York, bathhouse in Marine Park, Proj. P-44, $2[illegible] 000. CD 1/26—ENR 2/10.

★**N. Y., Brooklyn**—GOLF COURSE, etc.—Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5th Ave., New York, Zone 21, golf course, Proj. P-77, **$950,000.** Robert Tyre Jones, 20 Vesey St., New York, archt., concession bldg., in picnic area, Proj. P-[illegible] **$50,000.** Skidmore, Owings & Merrill, 5 E. 57 St., New York archt.; field house at boat house, Proj. P-77, $140,000, H. A. Magoon, 225 E. 47 St., New York, archt., for foregoing work at Marine Park.

N. Y., Brooklyn—PARK DEVELOPMENT—Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and Fifth Ave., New York, Zone 21, plans under way Van Voorhies Park, P-[illegible] **$130,000.** W. Earle Andrews, 1 E. 57 St., New York, Zone 22, consult. engr. CD 1/26—ENR 2/10.

★**N. Y., New York**—BATHING BEACH etc.—Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and Fifth Ave., Zone 21, plans under way bathing beach and bath house and general development of adjacent areas at Ferry Point Park, P 94, $1,500,000. Eggers & Higgins, 542 Fifth Ave., Zone 19, archts. W. Earle Andrews, 30 Rockefeller Plaza, Zone 20, engr. CD 2/1/43—ENR 2/4/43.

N. Y., New York—PARK RECONSTRUCTION—Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and Fifth Ave., Zone 21, plans under way St. Nicholas Park reconstruction, P-129. **$475,000.** G. D. Clarke, 10 Rockefeller Plaza, Zone 20, consult. engrs. CD 1/28—ENR 2/10.

★**N. Y., New York**—PLAYGROUND, etc.—Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., Zone 21, plans under way playground on East River Dr. between E. [illegible] and 61 Sts., P-117, **$445,000**; Vincent Clothrone playground addn., E. 161 St. and Hughes Ave., Bronx Boro, P-118, $[illegible] J. Ray, 101 Park Ave., Zone 17, landscape archt., recreation bldg. at Lenox Ave. and 143 to W. 145 Sts., P-113, **$225,000,** Skidmore, Owings & Merrill, 5 E. 57 St., Zone 22, archts. on all foregoing projects; Riverdale Park, P-115, **$282,000,** G. D. Clarke, 10 Rockefeller Plaza, Zone 20, consult. engrs. CD 1/[illegible] ENR 2/10.

★**Okla., Lawton** — AIRPORT BLDGS.—City, E. Glenn, mayor, plans under way administration bldg., **$200,000**; plans for completed hangars, shop and other airport facilities, **$875,000,** at airport. Bonds voted. Sorey, Hill & Sorey, First National Bldg., Okla., City archt.

★**Tex., Corpus Christi**—Nueces Co., [illegible] Judge, Corpus Christi, plans 5% completed drainage, levees, etc. $1,350,[illegible] Myers & Noyes, Furman Bldg., consulting engrs. J. V. Curnutte, co. engr. CD [illegible] —ENR 5/4.

★**Tex., Houston**—Harris Co., c/o Judge, Courthouse, **$9,000,000** bond election [illegible] 7, drainage. H. Zapp, Courthouse, co. engr.

Tex., Longview—AIRPORT BLDG.—Gregg Co., c/o Judge, Longview, airport administration bldg. **$110,150.** M. T. Clemens, Wichita Falls, archt.

★**Tex., San Antonio**—AIRPORT IMPROVEMENTS—City, plans 25% completed [illegible] nicipal airport imprvs., hangars, shop, etc., taxiway, new east-west runway, etc., **[illegible] 000,** A. B. & R. M. Ayres, Transit Tower Bldg., archts.; plans underway administration bldg. and ramp, **$200,000.** T. Castle, City Hall, engr. and M. L. Diver, 1104 [illegible] St., consult. engr. for both projects. CD [illegible] —ENR 7/13.

Wis., Rhinelander — AIRPORT — C[illegible] hangar, black top surfacing, lighting, [illegible] plane ramp, runway extens., at airp[illegible] **$61,000.** T. M. Wardell, city engr.

Ont., Ottawa—PLAYGROUNDS, etc.—C[illegible] City Hall, playgrounds, storage bldg. [illegible] workshop. **$150,000.** F. C. Askwith, [illegible] owner, engr.

Ont., Owen Sound—AIRPORT—City, M[illegible] G. Lediard, clk., W. G. Case, mayor, airp[illegible] About $75,000. L. R. Swift, Burlington, [illegible]

READY FOR BIDS.

Ill., Urbana—LIGHTING—City, G. H[illegible] mayor, City Hall, plans completed busi[illegible] district lights. **$19,000.** J. M. Klnch, act[illegible] city engr.

N. Y., New York—ANTENNA TOW[illegible] etc.—Bowery Savings Bank, 110 E. 42 [illegible] Zone 17, plans completed by B. Schlan[illegible] 595 Madison Ave., Zone 22, antenna [illegible] and broadcasting studio, 336-42 E. M[illegible] $150,000.

CONSTRUCTION REPORTS

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.
ELSIE EAVES, Manager *SCOTT McLEOD, Statistics* *J. A. MAHONEY, Reports*
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WATER SUPPLY

OPOSED WORK

N. J., Bridgeton—City, making plans 6 esian wells. Albright & Friel, 1520 Locust , Phila., Pa., engrs.

O., Cleveland—City, F. Foy, purch. agt., y Hall, making plans concrete fdn. and ing work for pump installation at Kirtd Pump. Station, $50,000; at Division Ave. mp. Station, $60,000. Havens & Emerson, ader Bldg., engrs.-archts.

O., Bucyrus—City, 500,000 gal. water rage reservoir, low lift booster pump and gh lift pumps, approx. 18,400 ft. 8- to 16- distr. lines, incl. valves, hydrants, appurnances, Ohio 33-298-N. $164,000. **FWA.**

I., Wakefield—Wakefield Water Co., 147 nan Rd., Narragansett, plans completed ater sys., 2 brick pumphouses. Jenks & allon, 2400 Industrial Trust Bldg., Provi- nce, engrs.

Tex., Pasadena—D. L. Atkinson, mayor, ity Hall, water imprvs. addn., $62,100. pplied for FWA funds. Garrett Engrg. , 1309 Milam St., Houston, Zone 3, engrs.

Wash., Port Orchard—Sunnyslope Water ist., c/o Parker & Hill, engrs., Smith wer, Seattle, Zone 4, water distr. sys. 0,000. Seeking FWA funds.

IDS ASKED

Bids Asked November 8

N. Y., New York—Commissioner Water pply, Gas & Electricity, Municipal Bldg., re 7, hauling, laying watermains, apurtenances, Bathgate and Tremont Aves., ilot and E. 150 Sts., Bronx Boro. Plans posit $1.

Bids Asked November 9

Mich., Grosse Ile Twp.—A. E. Fox, secy. d. Water Comrs., Town Hall, watermain tems, incl. 1,700 lin. ft. 18 in. c.i. pipe, purtenances. $15,000. Plans deposit $5. ate & Hirn, 532 Michigan Bldg., Detroit 26, grs.

Bids Asked November 13

Mich., Allegan—J. F. Mosier, mgr. Bd. P. ks, Allegan, furnishing, del. one 1600 hp. ater turbine, one 1500 kva. electric generae for turbine, 4800 volts, 3 phase, 60 cycle, ectric switchgear, incl. generator switch, nerator exciter set, generator voltage gulator and accessory equip. Plans deposit 0. Ayres, Lewis, Norris & May, 506 Wolverine Bldg., Ann Arbor, engrs.

Bids Asked November 14

Me., Waterville—Trustees of Kennebec ater Dist., Waterville, about 26,400 ft. 16 watermain, fitting, valves, etc. to North analboro. Plans deposit $10. Metcalf & ddy, 1300 Statler Bldg., Boston, Mass., grs.

Bids Asked November 14

†Tex., Amarillo—A. P. Hancock, city mgr., ity Hall, Venturi meter equpt., Contr. 6, ax. 41-476-N. $30,000. **FWA.** Plans deposit 0. Freese & Nichols, Capps Bldg., Fort Worth, engrs.

Bids Asked November 15

Calif., Oakland—East Bay Municipal Utility Dist., 512 16 St., Bixler Pump. Plant, ec. 56. Plans deposit $5. J. L. Longwell, gr. and ch. engr.

Bids Asked November 21

La., Hammond—City, WW imprvs., exansion. $95,000. J. M. Fourmy, Hammond, gr.

Bids Asked About December 1

†Utah, Helper—City, E. Flaim, recdr., 2 -f. rein.-con. covered reservoir, Utah 3-187-N. $52,000. **FWA.** C. J. Ulirich, 2 Ness Bldg., Salt Lake City, engr. CD 0/13—ENR 10/19.

OW BIDDERS

†D. C., Wash. — U. S. Eng., First and ouglas Sts. N.W., Zone 25, 36 in. pipeline, om Declaria Reservoir to Chain Bridge, ontr. A. from Leo Butler Co., 8416 Georgia ve., Silver Spring, Md., **$99,354.**

†Pa., Phila.—U. S. Eng., Penn Mutual ldg., 6 and Walnut Sts., Oct. 24, water line s. at Hog Island, from J. Hayden, 338 E. aines St., **$80,000.**

Tex., Houston—City, M. H. Westerman, ecy., City Hall, Oct. 25, pump house to ouse S.W. Pump. Station equip., from Knutson Constr. Co., Commerce Bldg., **$70,000.** D 10/16.

Symbols and Abbreviations Include:

✦	Federal Government
★	Project of $500,000 or over
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger; water supply, earthwork, waterworks, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

Classes of Construction

(Named in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED: (except Streets & Roads): BIDS ASKED (new announcements only. For full calendar, see also preceding issues of ENR);

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

†Tex., Temple—U. S. Eng., Fort Sam Houston, Oct. 24, addnl. water supply facilities, incl. 400,000 gal. concrete wood storage with wooden cooling tower and induced draft aerator of 700 g.p.m. cap., and elevated steel 100,000 gal. tank, and booster station and equip., incl. two 1,000 g.p.m. and discharge piping, McCloskey General Hospital, Ser. W-41-154-45-35, from Taylor Constr. Co., Taylor, **$35,868.** Bids 10/24.

Wash., Seattle—Water Dist. 20, c/o A. Hitchings, engr., Arctic Bldg., Zone 4, water distr. sys., from Thorburn & Logozo, 4608 35 Ave. S.W., **$30,738.**

CONTRACTS AWARDED

Ia., Ottumwa—City, H. A. Brown, supt., City Hall, concrete spillway, approx. 6,000 yd., to McCarthy Imprvt. Co., 602 Kahl Bldg., Davenport, approx. **$107,580.** Bids 10/21.

Tex., San Antonio—City Water Bd., W. D. Masterson, mgr., 106 W. Market St., drilling water wells, to Dozier & Draper, 125 13 St., approx. **$17,050.** CD 10/18—ENR 10/26; water distr. lines, connections, purchase and hire, **$50,000,** CD 10/19—ENR 10/26.

SEWERS, WASTE DISPOSAL

PROPOSED WORK

Conn., Danielson—Borough of Danielson, D. M. Page, Court of Burgesses, Danielson, sewage treatment plant preventing pollution Quinebaug River. Over $25,000.

La., Gretna—Jefferson Parish, voted $250,000 bonds, construction, maintenance garbage incinerator.

†Md., Towson—Baltimore County Metropolitan Dist., approx. 6,000 ft. 8- to 24-in. sewers; approx. 5,740 ft. 18 in. force main, incl. valves, fittings, 2 sewage pump. stations with equip., appurtenances, etc., Md. 18-198 (revised). $183,500. **FWA.**

Utah, Roosevelt—City, sanitary sewerage sys. $60,000.

★**Man., Winnipeg**—City, Health Com., 400 ton daily capacity incinerator, $550,000. J. A. Burnett, c/o owner, engr. W. D. Hurst, city engr.

N. C., Wilmington—City, rejected bids Oct. 25, refuse incinerator. J. A. Loughlin, city engr. CD 10/9—ENR 10/12.

Tex., Alvin—Leverton & Co., c/o O. T. Goldsmith, sales mgr., 1119 Hemphill St., Houston, sewerage disposal plant, incl. two 8,000 gal. precipitaton tanks, 16 sludge drying beds, outfall lines, etc. Howe & Wise, 610 Stewart Bldg., Houston, engrs.

Ont., Ingersoll—Town, R. McNiven, clk., sewerage sys. and sewage disposal plant. About $70,000. Armstrong Wood & Co., 62 Richmond St. W., Toronto, engrs.

★**Que., Montreal** — Municipality, J. A. Mongeau, city clk., collector sewer of upper watershed between Mount Royal Park and St. Lawrence River. $3,750,000. H. A. Gibeau, City Hall, engr.

BIDS ASKED

Bids Asked November 8

N. Y., Valley Stream—Bd. Educ. Central High School Dist. 1, Fletcher Ave., drainage sys. F. P. Wiedersum, 240 Rockaway Ave., engrs.

Bids Asked November 9

N. Y., New York—President Bronx Boro, Bronx County Bldg., 851 Grand Concourse, Zone 51, sewer, appurtenances Edson, Needham, Baychester and Sampson Aves.; setting curb, laying sidewalks, building inlets, receiving basins, drains, culverts, approaches and guard rails where necessary Barker Ave.

Bids Asked November 13

N. J., Pennsauken Twp. — Pennsauken Twp., Cove Rd. and Grant Ave., Pennsauken, sewage pump. sta. Plans deposit $20-$15 refunded. Perring & Remington, 509 Cooper St., Camden, engrs.

LOW BIDDERS

Md., Baltimore — City, c/o Bd. Awards, City Registers Office, City Hall, Oct. 20, installing mechanical and electrical equip. in Dundalk sewage pump. sta., from Bass Engr. & Constr. Co., 215 Birmingham Theatre Bldg., Birmingham, Mich., **$128,000.** CD 10/12.

N. J., Glen Rock — Borough, Municipal Bldg., Oct. 23, sewage pump sta., appurtenances, from Lin-Hill Const. Co., 262 Main St., Hackensack, **$25,588.** CD 10/17—ENR 10/19.

†Va., Hilton Village (br. Newport News)—At office J. C. Morris, dir. P. Wks., Hilton Village, Oct. 25, sewage pump. sta., Va. 44-393, from Virginia Engrg. Co., Melson Bldg., Newport News, **$117,638. FWA.** CD 10/17—ENR 10/19.

CONTRACTS AWARDED

D. C., Wash. — District Comrs., District Bldg., sewers, watermains, Alabama Ave. and E St., Falls Terrace and 46 St. S.E., to Intercounty Constr. Co., Hyattsville, Md., **$31,980.** Bids 9/29.

Ga., Barnesville—Aldora Mills, Barnesville, sewage disposal plant, to F. Benford, Thomason, **$30,000.** J. J. Harte, Mortgage Guaranty Bldg., Atlanta, engr.

N. C., Fayetteville—Storm drainage, to Cape Fear Equipment Co., Fayetteville, **$62,569.** Bids 10/16. W. W. Baker, Fayetteville, city engr.

BRIDGES

PROPOSED WORK

Conn., New Haven—City, J. M. Golden, dir. P. Wks., 100 Orange St., making plans bridge repairs, piers, abutments, Kimberly Ave. W. Vincent Barry, Hall of Records, engr.

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BRIDGES (Proposed Work, Cont'd.)

Mich., Saginaw—City, A. Eckert, P. Wks. Dir., made plans rehabilitating Mackinaw St. bridge, replacing existing timber approach trestles, piers supporting truss spans and center pier fender. $90,000.

Alta., Calgary—Municipality, subway, W. 4 St. $100,000. J. R. Wood, City Hall, engr.

N. B., Saint John—Canadian National Rys., H. A. Dixon, ch. engr., 360 McGill St., Montreal, Que., overpass at Mill St. crossing. $50,000.

Ont., Toronto — Toronto Transportation Comn., 35 Yonge St., bridge over ravine at Bayview Ave. $50,000.

Ont., Wallaceburg — Municipality, bridge over Sydenham River. $35,000. W. Colby, Town Hall, engr.

BIDS ASKED

Bids Asked November 8

Louisiana—State Hy. Dpt., Baton Rouge, pier protection, etc., Red River Bridge (Moncla) over Red River on State Route 57, S.P. 33-03-05, Federal Aid Secondary Hy. Proj. FAS 81 (1), Avoyelles Parish.

LOW BIDDERS

Idaho—At office J. D. Wood, acting comr. P. Wks., Boise, Oct. 20, redecking Pickle Butte bridge, near Marsing, Canyon and Owyhee Counties, from A. D. Stanley, 1619 N. 4 St., Boise, **$48,922.** Est. $52,000.

★**Ill., Chester**—Chester Bridge Comn., J. A. File, chn., City Hall, Oct. 20, reconstructing bridge superstructure over Mississippi River, incl. replacing two 670 ft. center spans, from Massman Constr. Co., 737 New York Life Bldg., Kansas City, Mo., **$656,000.** CD 10/4—ENR 10/12.

Tennessee—State Dpt. Hys. & P. Wks., Nashville, Oct. 20, bridge, approaches on State Hy. 73, Blount Co., from Dodds Constr. Co., 5530 Tennessee Ave., Chattanooga, **$186,154.** CD 10/10—ENR 10/12.

Virginia—Dpt. Hys., Richmond, Oct. 26, reconstructing two 144 ft. steel span bridge, over James River, Route 602, Hawardsville, Albemarle Co., from McDowall & Wood, Box 1193, Roanoke, **$25,931.** CD 10/16—ENR 10/19.

CONTRACTS AWARDED

Connecticut—State Hy. Com., Hartford, culvert pipe and drainage structure, South Windsor-East Hartford, to A. E. Williams Co., State Office Bldg., Hartford, **$28,832.**

Florida—State Road Dpt., Tallahassee, imprv. 412.5 ft., Taylor Co., to Wainer Constr. Co., Valdosta, Ga., **$37,540.** Bids 10/24. CD 10/17.

Maryland—State Roads Comn., Baltimore, bridge, Dorchester Co., to Tidewater Constr. Corp., 547 Front St., Norfolk, Va., **$29,401,** Bids 9/26, CD 9/21; reconstructing bridge, Baltimore Co., to J. Melvin Roberts, Cockeysville, **$32,393,** Bids 10/17, CD 10/13.

Oklahoma—State Hy. Dpt., Oklahoma City, rein.-con. bridge, Craig Co., to H. D. Youngman, Baxter Springs, Kan., **$34,473.** Est. $32,647. Bids 10/10, awarded 10/17. CD 9/27.

STREETS AND ROADS

BIDS ASKED

Bids Asked November 8

Louisiana—State Hy. Dpt., Baton Rouge, shaping roadway, bituminous surface treatment on gravel base course, etc. 16.7 mi. Sects. 4 and 5, Manuever area roads, Group 2, Contr. 2, S.P. 737-00-07; shaping roadway, gravel surfacing, etc. 28.9 mi. Sects. 6, 7, 8, and 10, Manuever Area roads, Group 9, S.P. 737-00-14, both Rapides Parish.

N. Y., Staten Island—President Richmond Boro, Boro Hall, Zone 1, bituminous concrete paving Richmond Rd. and Hillside Terrace.

Bids Asked November 9

Virginia—Dpt. Hys., Richmond, concrete widening 2.2 mi. Routes 22 and 522, S.P. S-109-W2, Louisa Co.; bit. top course and alternate types rein.-con. on concrete surfacing, and 3.2 mi. Route 13, S.P. S-38-W3, Mi, Accomack Co.

Bids Asked November 10

Alabama—G. R. Swift, dir. State Hy. Dpt., Montgomery, grading, drainage, concrete pavement and bridges 0.785 mi. on Tuscaloosa-Eutaw Rd., FAP SN-FAP-150-A(5), Tuscaloosa Co.; temporary surfacing 17.2 mi. road from Ashville to Pell City, Maint. Sec. 2203-C, St. Clair Co.; removing old bridge on Tuscaloosa-Eutaw Rd. and constructing new bridge over North River, FAP SN-FAP-150-C(2), Tuscaloosa Co.; removing structures on Midway-Clayton Rd., S.P. S-126-C, Bullock and Barbour Counties; constructing Cattle Guards in Foley, Maint. Sects. 6335-A, 6340-A and 6342-A, Baldwin Co.

Minnesota—State Hy. Dpt., Windom, crushing, screening, loading, hauling and stockpiling about 16,200 cu. yd. gravel for maintenance Div., Windom, Cottonwood Co. $25,000. O. L. Kipp, c/o State Hy. Dpt., ch. engr.

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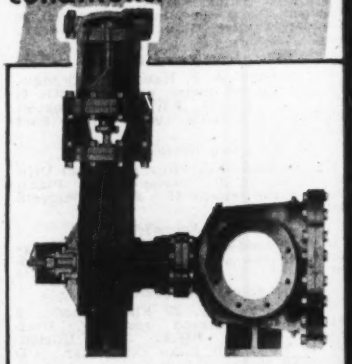

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STREETS AND ROADS (Bids Asked, Cont'd.)

Bids Asked November 10

New Mexico—State Hy. Dpt., F. G. Healy, engr., Santa Fe, base and top surfacing, oil processing and miscellaneous construction 4.622 mi. U.S. Hy. Route 54, between Tularosa and Carrizozo, F.A.P. 99-E (1) and 99-F (1), Lincoln and Otero Counties; base and top surfacing and oil processing 7.991 mi. State Hy. Route 58 between Clayton and New Mexico-Oklahoma State Line, F.A.P. 196-A (1) Union Co.

Bids Asked November 13

Minnesota—State Hy. Dpt., Rochester, crush, screen, load and haul and place in stockpiles about 22,500 cu. yd. crushed rock for Maintenance Div., Rochester, Olmsted Co. $16,000. Contractor to furnish material in place. O. L. Kipp, ch. engr.

Bids Asked November 17

Kentucky — State Dpt. Hys., Frankfort, grading, drainage, light surfacing 0.194 mi. Harlan-Hyden Rd. beginning at point on Ky. 257 approx. 4 mi. NE of Baxter and extend. 0.194 mi. towards Hyden, RP-48-188, Harlan Co.; 0.416 mi. Maysville-Paris Rd. (CS 44). Revison at Washington approx. 4 mi. south of Maysville, Proj. SP-81, 175, Mason Co.

LOW BIDDERS

California—State Div. Hys., Sacramento, Oct. 25, imprv. 0.9 mi. Humboldt Co., from E. H. Bushop, Orland, **$26,000.** CD 10/17—ENR 10/19.

New York—State Dpt. P. Wks., H. A. Cohen, dir. Bureau Contracts & Accounts, Albany, Oct. 25, imprv. 1.02 mi. FAS-RD-44-2, Orange Co., from Lane Constr. Co., 37 Colony St., Meriden, Conn., **$237,243.** CD 10/11—ENR 10/12.

N. Y., Glens Falls—U. S. Eng., 120 Wall St., New York, Zone 5, Oct. 25, grading, from Lane Constr. Co., 37 Colony St., Meriden, Conn., **$26,670.**

N. Y., Syracuse—U. S. Eng., 120 Wall St., New York, Zone 5, Oct. 25, grading, filling, from A. Leaf, 1131 Howard St., Utica, **$47,-250.**

★**Pennsylvania** — Dpt. Hys., Harrisburg, Oct. 25, imprv. 1.34 mi. Cambria Co., from S. J. Groves & Son, 19 Rector St., New York, N. Y., **$173,014**; 3.24 mi. Lebanon Co., from Potts & Callahan Contracting Co., Inc., 500 W. 29 St., Baltimore, Md., **$672,262.** CD 10/17—ENR 10/19.

★**Pennsylvania**—State Hy. Dpt., Harrisburg, Oct. 24, imprv. 4.85 mi. and 2.46 mi. Lebanon Co., from Potts & Callahan Contg. Co., Inc., 500 W. 29 St., Baltimore, Md., **$1,225,752** and **$350,539** respectively. CD 10/19.

★**Pennsylvania**—State Dpt. Hys., Harrisburg, Oct. 27, imprv. 2.26 mi. Allegheny and Beaver Counties, from Booth & Flinn Co., 1943 Forbes St., Pittsburgh, **$746,781.** CD 10/19.

★**Texas**—State Hy. Comn., Austin, Oct. 24, imprv. 96.72 mi. Jasper, Newton and Sabine Counties, from R. W. McKinney, Nacogdoches **$133,539**; 6.160 mi. Hill Co., from H. L. Campbell, 2435 Winton Terrace, West Fort Worth, **$193,326**; 8.705 mi. Bowie Co., and 2.141 mi. Dallas Co., from Austin Road Co., 1813 Clarence St., Dallas, **$369,792** and **$85,822** respectively; 3.379 mi. Liberty and Chambers Counties, from Harrison Engr. & Constr. Co., 4628 Mill Creek Parkway, Kansas City, Mo., **$143,537.** CD 10/10—ENR 10/12.

CONTRACTS AWARDED

Arkansas — State Hy. Dpt., Little Rock, imprv. 5.6 mi. Crittenden Co., to D. F. Jones Constr. Co., Box 1365, Little Rock, **$67,708**; 5.1 mi. Ashley Co., to Graves Brothers, Hamburg, **$69,687.** Bids 10/26. CD 10/17—ENR 10/19.

Florida—State Hy. Dpt., Tallahassee, imprv. 2.017 mi. Duval Co., to Duval Engr. & Contr. Co., foot of Adams St., Jacksonville, **$40,072***10,123 mi. Taylor Co., to Langston Constr. Co., Orlando, **$48,351*** 2.103 mi. DeSota Co., to Brinson Constr. Co., Caesar and Cumberland Rds., Tampa, **$99,101.** Grand total $187,524. Bids 10/17.

†**La., Lake Charles**—C. L. Hampton, pres. Calcasieu Parish Police Jury, paving, La. 16-143-N, to W. R. Aldrich & Co., Kalwrah University Gardens, Baton Rouge, **$27,575.** FWA. Bids 9/26.

Man., Winnipeg — Municipality, concrete paving Nassau, Chalmers and Seymour Sts., day labor. **$26,819.**

†**Missouri**—U. S. Eng., 816 U. S. Courthouse & Customhouse, St. Louis, Zone 2, repairing road surfacing, walkways, 2 road washouts, road crossing and filling a lagoon, Neg. 23-065-45-33, St. Charles Co., to Grantwood Contg. Co., 7952 S. Rockhill Rd., St. Louis County, St. Louis, Zone 19. **$26,821.** Bids 10/4. CD 10/13—ENR 10/19.

New Mexico—At office F. G. Healy, engr. State Hy. Dpt., **Santa Fe**, base course surfacing 14 mi. S.P. 4 and 203 on State Hy. Rte. 44, between Bernalillo and Bloomfield, Sandoval Co., to **F. D. Shuffebarger, 200 E.** Central St., **Albuquerque, $35,315**; grading, surfacing, minor drainage structures, miscellaneous construction 4.17 mi. FAP DA-WR 54, between U.S. Hy. 85 and **Santa Fe** Airport, Santa Fe Co., to **W. L. Denison, 321 7** St., Las Vegas, **$26,787.** Bids 10/24.

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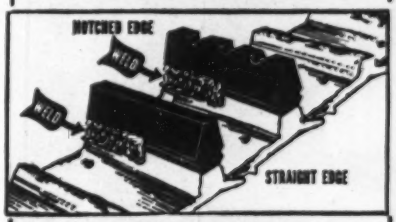

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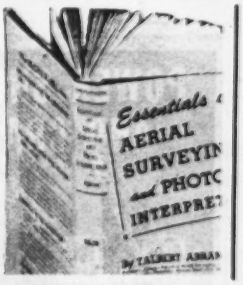

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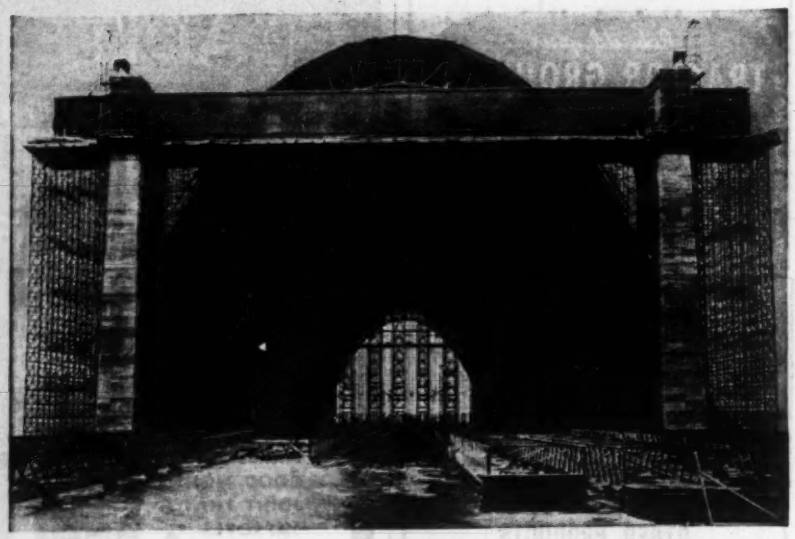

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STREETS AND ROADS (Contracts Awarded, Cont'd.)

New York—H. A. Cohen, dir. Bureau Contracts & Accounts, State Dpt. P. Wks., Albany, imprv. 4.17 mi. Seneca Co., to A. L. Blades & Sons, Hornell, $49,992. Bids 10/26. CD 10/3—ENR 10/5.

Ohio—State Hy. Dpt., Columbus, imprv. 7.239 mi. Knox Co., to Knox Paving Co., 801 Gas & Electric Bldg., Dayton, Zone 2, $77,008, est. $82,800***; 2.454 mi. Hamilton Co., to Scully Brothers, 405 Atlas Bank Bldg., Cincinnati, $37,991, est. $38,600***; 0.987 mi. Clinton Co., to Clinton Constr. Co., 114 E. Sugartree St., Wilmington, $29,800. Grand total $144,799. Bids 10/17. CD 10/6—ENR 10/12.

Oklahoma—State Hy. Dpt., Oklahoma City, Co., to H. D. Youngman, Baxter Springs, Kan., $80,764 and $64,198 respectively. Est. $83,035 and $59,141 respectively. Bids 10/10, awarded 10/17. CD 9/27.

†**Pa., Phila.**—U. S. Eng., Penn Mutual Bldg., 6 and Walnut Sts., grading at Hog Island, to R. B. Jaggard, Westmont, $40,410. CD 10/13—ENR 10/19, under Unclassified.

EARTHWORK, WATERWAYS

PROPOSED WORK

Illinois—Illinois Flood Control Comn., c/o Lt. Gov. Cross, Springfield, cleaning, dredging Little Calumet River, Thorn and Deer Creeks in Thornton and Bloom Twps. $200,000.

O., Cleveland—City, F. Foy, purch. agt., City Hall, bulkheads, jetties backfilling to protect shoreways and roadways along Lake Erie. $200,000. J. C. Wenrick, City Hall, city engr.

BIDS ASKED

Bids Asked November 11

†**Louisiana**—U. S. Eng., U. S. Post Office and Courthouse, Vicksburg, Miss., 200,000 cu. yd. earthwork on east side of Red River, Avoyelles Parish. $40,000.

Bids Asked November 14

†**Arkansas**—U. S. Eng., P. O. Box 60, Vicksburg, Miss., 48,300 cu. yd. earthwork on Terre Noire Creek, Clark Co., Sol. No. 22-052-45-38.

Bids Asked November 17

†**N. M., Tucumcari**—Bureau Reclamation, Dpt. Interior, H. W. Bashore, comr., Tucumcari, earthwork, Station 4 plus 50 to Station 55 plus 59 Tucumcari lateral and earthwork and Tunnel 5, Station 2931 plus 52 to Station 2973 plus 45, Station 3043 plus 94 to Station 3188 plus 52, Conchas Canal, near here.

Bids Asked November 20

Louisiana—Police Jury St. Bernard Parish, Courthouse Bldg., Chalmette, drain ditches and canals, Versailles Sect., 3 Ward, St. Bernard Parish.

Bids Asked November 20

†**Oklahoma**—Bureau Reclamation, Altus, 473 000 cu. yd. excav., 1,977 cu. yd. concrete, West Canal turnout, Altus Main Canal, Sta. 0 plus 75.5 to Sta. 589 plus 25, Altus, Spec. 1081. Extended date. CD 10/12—ENR 10/19.

Bids Asked Novemmber 24

†**Calif., Coram**—Bureau Reclamation, Court House, Denver, Colo., one 20-ton hoist elevator, incl. pump, motor, piping, electric controls and wiring for Shasta Dam, Kennett Div., Central Valley Proj., Spec. 1777-D. W. R. Young, acting ch. engr.

LOW BIDDERS

Calif., Sierra Madre—Los Angeles County Flood Control Dist., 751 S. Figueroa St., Los Angeles, Oct. 24, Bailey Canyon Debris Basin, 16,000 cu. yd. excav., from C. G. Willis & Son, 2119 E. 25 St., Los Angeles, $33,623. M. E. Salsbury, 751 S. Figueroa St., Los Angeles, engr.

†**Mississippi**—U. S. Eng., U. S. Post Office Courthouse, Vicksburg, Oct. 17, constructing (a) 1,146,000 cu. yd. or (b) 1,347,000 cu. yd. under alternate plan of earthwork in Dennis Levee Set-Back and Dyke on east bank Mississippi River, Solic. 22-05-45, from Stacy-McAdams Const. Co., West Memphis, Ark., (a) 22.24c. per cu. yd.

†**Tex., Freeport**—U. S. Eng., 25 St. and Avenue F, Galveston, Oct. 21, dredging approx. 895,500 cu. yd., Freeport Harbor, from Atlantic, Gulf & Pacific Dredging Co., Citizens State Bank Bldg., Houston, 6.5c. cu. yd. Est. $75,000.

CONTRACTS AWARDED

†**Ark., Pine Bluff**—U. S. Eng., 300 Bway., Little Rock, levee repair work, Plum Bayou Levee Dist., to T. L. James, Inc., Ruston, La., $31,000.

†**Illinois**—U. S. Eng., 816 U. S. Courthouse & Customhouse, St. Louis 2, Mo., reconstructing levees, incl. placing approx. 350,000 cu. yd. earth, etc., Neg. 23-065-45-39, Greene and Jersey Counties, to O'Dell & Riney Constr. Co., 310 S. Fillmore St., Kirkwood, St. Louis, Mo., $112,325. Bids 10/12.

Ill., Chicago—Sanitary Dist. of Chicago, 910 S. Michigan Ave., river control work, incl. cofferdam, dewatering, etc., Contr. 44-50, to N. S. Mackie Co., 228 N. La Salle St., $43,500.

EARTHWORK, WATERWAYS (Contracts Awarded, Cont'd.)

★†**Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, 456,000 cu. yd. uncompacted fill on Mississippi River Levees, to Bernberg Dredging Co., Pere Marquette Bldg., New Orleans, $1,362,400; 240,000 cu. yd. to D. W. Winkelman Co., Natchez, Miss. $103,000, work in Ponchartrain Levee Dist., Solic. No. 16047-45-33, Item L-218.7, Lopez Levee, East Baton Rouge Parish. Awarded 10/20.

†**Missouri**—U. S. Eng., $16 U. S. Courthouse & Customhouse, St. Louis, Zone 2, repairing earthen levees along Missouri River, incl. placing approx. 50,000 cu. yd. earth, etc., Neg. 23-065-45-40, St. Charles Co., to American National Const. Co., 314 N. Bway., St. Louis, Zone 1, $22,980. Bids 10/12.

†**Mo., St. Louis**—U. S. Eng., $16 U. S. Courthouse & Customhouse, St. Louis, Zone 2, standard bank protection of not less than 450 ft. and not more than 2,550 lin. ft. along Mississippi River, Neg. 23-065-45-34, to Patton-Tully Transportation Co., P. O. Box 1133, Memphis, Tenn., $90,395. Bids 10/2.

LATIN AMERICA

Mexico—Gas Industrial de Monterrey, S. A., Monterrey, plans constructing 140 mi. 14 in. natural gas pipeline carrier between Reynosa and Monterrey, $750,000; constructing, equipping 2 or more booster stations on above pipeline, $125,000.

Mexico—National Rys. of Mexico, E. Rodriguez y Parra, Engr. M.W., 19 Bolivar St., Mexico City, will reconstruct and repair flood damaged railroad beds throughout the republic, by own forces. **$450,000.**

Mexico — Petroleos Mexicanos, Efrain Buenrostro, genl. mgr., Ave. Juarez, Mexico City, plans nation-wide construction plants, repairs and enlargements existing plants, incl. **Tampico**, repairing pipelines incl. **Poza Rica**, new lines, machinery etc. $16,000,000.

Mexico, Campeche—Campeche State Govt., Lic. Eduardo J. Lavalle Urbina, governor, Palacio del Estado, plans 250 bed general hospital. $210,000. State to finance 1/3 and federal government 2/3 of cost.

Mexico, Cuernavaca—Textiles Morelos, S. A. Cuernavaca, plans spun rayon factory. $615,000.

Mexico, Cuatro-Cienegas—State, Governor Benecio Lopez Padilla, Capital City, Torreon, will construct water sys. by own forces. **$100,000.**

Mexico, Mexico City—Federal District, Mayor Rojo Gomez, Mexico City, will reconstruct and repair streets from corner of San Diego St. to Tlaxpana, incl. widening Avenida Hidalgo, by own forces. **$110,000.**

Mexico, Mexico City—Industrias Nalon, 5 de Mayo, No. 32-207-208, Mexico, D. F., plans steel grub screw mfg. plant. $125,000.

Mexico, Mexico City—Manuel Sevilla Serdan, Liverpool, No. 12, Mexico, D. F., plans ribbon mfg. plant. $100,000.

Mexico, Parral—City, will construct and repair public utilities and bldgs., damaged by floods, by own forces, under direction of Rodrigo M. Quevedo, head of Military zone.

Mexico, San Luis Potosi—State Government, Palacio del Estado, San Luis Potosi, plans 250 room hotel. $210,000.

Mexico, Tacubaya—Cia. Manfacturera de Artefactos Electricos, Ave. Marti, 52, plans electric transformer mfg. plant. $125,000.

Mexico, Tlalnepantla—Vidriera Industrial Azteca (Alfonso Jean, Enrique Ruffo, Alfredo and Lionel Villasenor, Hilario Gabilondo and Alfredo Tinajero), Mexico City, bids within 90 days constructing glass factory to manufacture medicine containers. $150,000.

Mexico, Torreon—Cia. Cervecera de La Guna, S. A., Torreon, will construct brewery, by own forces. **$265,000.**

Mexico, Torreon—Comite Pro-Puerto Aereo, Torreon, Coah, plans civil airport on 675 acre site. $615,000.

Mexico, Villa de la Paz—City, Pedro Torrea, municipal presidente, Municipal Bldg., bids within 90 days, constructing school center, gymnasium, playgrounds. $150,000.

PUBLIC BUILDINGS

PROPOSED WORK

†**Arizona**—Pub. Housing Auth., NHA, 785 Market St., San Francisco, Calif., 90 family stop-gap dwelling units, Maricopa Co., Ariz. 2144.

†**Calif., Alameda**—Pub. Bldgs. Admin., 18 and F Sts. N.W., Wash., 25, D. C., bids soon 7 classroom addn. to Ashland School and 15 classroom addn. to San Lorenzo School, Calif. 4-640-F. $224,000. FWA. G. C. Sullivan, 2223 Fulton St., Berkeley, Zone 1, engr. Dragon & Schmidts, 2065 Allston Way, Berkeley, Zone 4, archt.

†**Calif., Albany**—Pub. Housing Auth., NHA, 760 Market St., Phelan Bldg., San Francisco, plans by F. L. Confer, Financial Center Bldg., Oakland, 100 family dwelling units, Calif. 4894-N. CD 10/5—ENR 10/12.

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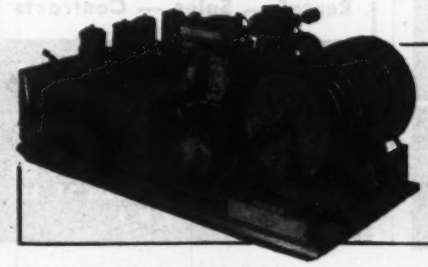

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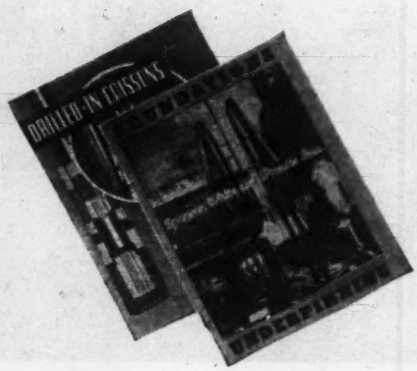

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PUBLIC BLDGS. (Proposed Work, Cont'd.)

†**Calif., Baldwin Park**—Baldwin Park School Dist. of Los Angeles Co., child care facilities, Calif. 4-677-F. $30,720. **FWA.**

†**Calif., Oakland**—Pub. Housing Auth., NHA, Phelan Bldg., 760 Market St., San Francisco, plans by M. Corbett, 210 Post St., San Francisco, 20 family dwelling units, Calif. 4919-N.

†**Calif., San Diego**—Bd. Educ., 825 Union St., bids soon 25 room addn. to Dana Jr. High School, 1775 Chatsworth Blvd., Point Loma, Calif. 6-624-N. $288,000. **FWA.** F. S. Hope, Jr., 1008 San Diego Trust & Savings Bldg., archt. CD 10/5—ENR 10/12.

†**Conn., New London**—Pub. Housing Auth., NHA, 24 School St., Boston, Mass., grading, drainage Conn. 6017. J. W. Whitney, Belden Hill, Wilton, archt.

★†**D. C., Wash.**—St. Elizabeth's Hospital, Congress Heights, warehouse, laundry and shop bldgs. $1,000,000. **FWA.**

†**Ind., Indianapolis**—City, 2 story, part bsmnt. health clinic, Ind. 12-224-N. $129,324. **FWA.**

†**Ind., La Porte**—Hudson School Twp. of La Porte Co., 1 story, part bsmnt. school, Hudson School Twp., La Porte Co., Ind. 12-222-N. $52,100. **FWA.**

★**Ind., Oaklandon**—Marion County Tuberculosis Assn., Mary A. Meyers, exec. secy., 130 E. Wash. St. Bldg., Indianapolis, sketches by Pierre & Wright, 926 Archts. & Bldrs. Bldg., Indianapolis, 7 story, brick, stone, rein.-con. tuberculosis sanitarium addn., also boiler house, 2 wing addns. nurses' home. $500,000.

†**Kan., Sunflower Village (RFS Eudora)**—Village Council plans by Neville & Sharp, 1221 Baltimore St., Kansas City, Mo., recreation bldg. and theatre, Kan. 14-263-F. $135,000. **FWA.** CD 10/19—ENR 10/26.

†**Ky., Louisville**—Park & Tilford Distilleries of Kentucky, Inc., Starks Bldg., plans by United Engineers & Constructors, Inc., engrs., 1401 Arch St., Phila., Pa., 2 story, brick, feed recovery plant. $250,000. Defense Plant Corp. allotted funds. CD 9/12—ENR 9/14, under Midway.

La., Jeanerette and New Iberia—Iberia Parish Police Jury, New Iberia, converting old parish courthouse bldg., New Iberia and unselected bldg., in Jeanerette, as Veteran's Memorial Centers. $150,000.

†**Me., Presque Isle**—Pub. Housing Auth., NHA, 24 School St., Boston, Mass., community bldg., Me. 17079.

†**Mich., Inkster**—School Dist. 7, Nankin Twp. recreation bldg., Mich. 20-366-F. $88,735. **FWA.**

†**Mich., Inkster**—School Dist. 8, Dearborn Twp., recreation bldg., Mich. 20-365-F. $88,735. **FWA.**

Mich., Lansing—City, plans by Herrick & Simpson, 1005 Bauch Bldg., 2 story, 137x166 ft., brick, steel, rein.-con. fire station. $150,000.

†**Mich., New Haven**—Pub. Housing Auth., NHA, 2073 E. 9 St., Cleveland 15, O., 24 family stop-gap dwelling units, Mich. 20268.

†**Mich., Pontiac** — Pub. Housing Auth., NHA, 2073 E. 9 St., Cleveland 15, O., 200 family stop-gap dwelling units, Mich. 20266, 250 single person dwelling units, Mich. 20269.

†**Mich., Ypsilanti**—City, recreation bldg., Mich. 20-377-F. $56,000. **FWA.**

†**Mo., Neosho**—Pub. Housing Auth., NHA, 201 N. Wells St., Chicago 6, Ill., 80 single person dwelling units, Mo. 23081.

★**Mo., St. Louis**—Reconstruction Com. of St. Louis, c/o Mayor Aloys P. Kaufmann, City Hall, 12 and Market Sts., Zone 3, brick, concrete slum clearance housing in 2 city-block area bounded by Hadley, 13, Tyler and Madison Sts. $811,860 initial unit. Project will be extended later to 22 block area in same general neighborhood. $8,000,000 plus.

†**Nev., Las Vegas**—Bd. Comrs., Las Vegas, bids soon 2 fire stations, Nev. 26-136-N. $65,000. **FWA.** A. Wilson, 607 Architects Bldg., Los Angeles, Calif., archt. CD 8/16—ENR 8/24.

N. J., Vineland—Dpt. P. Wks., Boro Hall, electric plant. $300,000. H. A. Kuljian & Co., 1518 Walnut St., Phila., Pa., engrs.

†**N. Y., Brentwood**—U. S. Eng., 120 Wall St., New York, Zone 5, bids soon gymnasium at Mason General Hospital. $85,000.

★†**N. Y., Elmira**—Bendix Aviation Corp., South Bend, Ind., addnl. plant bldgs. Approx. $4,670,000. Defense Plant Corp. will finance.

†**Ore., Eugene**—Pub. Housing Auth., NHA, Skinner Bldg., 5 Ave. and Union St., Seattle 1, Wash., 100 homes. $400,000.

†**Ore., Sutherlin**—School Bd., Sutherlin, plans by Freeman & Hayslip, Postal Bldg., Portland, school addn., Ore. 25-186-N. $66,100. **FWA.** CD 10/13—ENR 10/19.

Pa., Gradyville—Edgemont Twp. School Bd., Mrs. Bessie R. Morrow, secy., Delchester Rd., plans completed by A. Sydney Martin, 1700 Walnut St., Phila., and bids soon 1 story, brick school, stone fdn.

†**Pa., Locust Summit**—American Briquet Co., 1417 Sansom St., Phila., sketches completed by Day & Zimmerman, Inc., engrs.-archts., Packard Bldg., Phila., briquet coal mfg. plant. $250,000. Defense Plant Corp. will finance.

PUBLIC BLDGS. (Proposed Work, Cont'd.)

†Pa., New Castle—Pub. Housing Auth., NHA, 270 Bway., New York, N. Y., plans by Martsalf & Martsalf, 512 3 Ave., New Brighton, trailer camp housing, Pa. 36466. CD 10/3—ENR 10/5.

★†Pa., Phila.—Publicker Commercial Alcohol Co., 1429 Walnut St., addnl. plant bldgs. Approx. $3,675,000. Defense Plant Corp. will finance.

†Pa., St. Nicholas—American Briquet Co., 1417 Sansom St., Phila., sketches completed by Day & Zimmerman, Inc., engrs.-archts., Packard Bldg., Phila., briquet coal mfg. plant. $250,000. Defense Plant Corp. will finance.

†Tex., Austin—U. S. Eng., 25 St. and Avenue G, Galveston, motor mechanical repair shop unit. Over $40,000.

†Tex., Pasadena—Pasadena Independent School Dist., Pasadena, 1 story Kruse School addn., and 1 story addn. connected by covered walkway to Pasadena Gardens School, Tex. 41-705-N. $125,000. FWA.

†Utah, Ogden—Order of Catholic Sisterhood of St. Benedict, St. Joseph, Minn., bids soon power house and garage at Hospital and Nurses' Home, Utah 42-78-N. FWA. J. K. Monroe, 22 St. and Bway., Denver, Colo., archt.

Va., Alexandria—Bd. Educ., City Hall, bids soon high school addn. $200,000. Div. School Bldgs., State Dpt. Educ., State Office Bldg., Richmond, archt.

Va., Newport News—Bd. Educ., 222 32 St., plans by Williams, Colle & Pipino, Melson Bldg., 2 school bldgs. $435,000. Applied to FWA.

★Va., Richmond—Bd. Educ., 312 N. 9 St., sketches by Carneal, Johnston & Wright, Atlantic Life Bldg., school. $500,000.

†Wash., Kennewick—Kennewick Hospital Assn., hospital, Wash. 45-299-F. $350,000. FWA.

†Wis., Seymour—School Dist. 1, 1 story, bsmnt., 3 classroom school, Wis. 47-170-N. $24,700. FWA.

N. B., Saint John—Municipality, 15 dwellings, on recently purchased Reid's Castle property. $150,000.

Ont., Billings' Bridge (Postal Dist. Ottawa)—Dominion Govt., Ottawa, plans by Dpt. Veterans Affairs, Ottawa, 50 dwellings, Bowesville Rd. $250,000.

Ont., Kingston—Counties of Frontenac, Leeds, Prince Edward, Hastings, Lennox, Addington, Lanark, and Grenville, Dr. G. C. Brink, chn., c/o Ontario Dpt. Health, Toronto. 100 bed tuberculosis sanatorium. $400,000.

Ont., London—Bd. Educ., C. C. Carthers, chn., 404 Talbot St., plans by L. E. Carrothers, c/o owner, brick, steel addn. H. B. Beal Technical School. $250,000.

Ont., Ottawa—Dpt. Veteran's Affairs, Ottawa, 100 houses for returned veterans, 50 houses on Aylmer Rd. and 50 near Hog's Back on Bowesville Rd. $400,000.

Que., Amqui—Municipality, J. W. Pelletier, clk., in cooperation with Provincial Govt., Dpt. Attorney-Service, Quebec City, plans by Dpt. P. Wks., Quebec City, jail and residences. $150,000.

Que., Aylmer—Dominion Govt., Ottawa, Ont., plans by Dpt. Veteran Affairs, Ottawa, Ont., 50 houses on Aylmer Rd. $200,000.

★†Que., Montreal—Municipality, J. A. Mongeau, city clk., City Hall, city hall annex exten. $2,400,000. H. A. Gibeau, City Hall, engr.

Sask., Lac La Ronge—Dpt. Nat. Resources, Regina, refrigeration bldg. $45,000.

BIDS ASKED

Bids Asked After November 1

†D. C., Anacostia—Pub. Housing Auth., NHA, Longfellow Bldg., 1201 Connecticut Ave. N.W., Wash., Zone 25, 300 family dwelling units, D. C. 1-6. Louis K. Kahn, Bulletin Bldg., Phila, Pa., archt. CL 9/11—ENR 9/14.

Bids Asked November 7

†N. J., Pennsgrove—Pub. Housing Auth., NHA, 270 Bway., New York, 7, N. Y., heating connections, N. J. 28061. E D'Ambly, 1700 Walnut St., Phila., Pa., engr.

Ind., Hobart—Bd. Educ., Hobart, 1 story, 69x165 ft., brick, concrete school addn., Ind. 12-216 N. $70,000. FWA. Maurer & Maurer, Lafayette Bldg., South Bend, archts. CD 8/30—ENR 9/7.

Bids Asked November 8

†Mass., Everett (br. Boston)—City, Mayor's Office, City Hall, brick nurses' home, Whidden Memorial Hospital, $65,000. FWA. Plans deposit $20 each set. James H. Ritchie & Associates, 20 Newbury St., Boston, archts. CD 10/11—ENR 10/19.

†Mich., Detroit—E. M. Lane, Bd. Educ., 1354 Broadway Ave., 2 story, bsmnt., brick, steel, rein.-con., stone addn. Trix School, Mich. 20-261-N. $67,042. FWA. Plans deposit $25. B. C. Wetzel & Co., 4643 Pacific Ave., archts.

†N. Y., Plattsburg—Champlain Valley Hospital, nurses training school, NY 30253. $45,000. FWA. A. W. Inman, 45 Cumberland Ave., archt.

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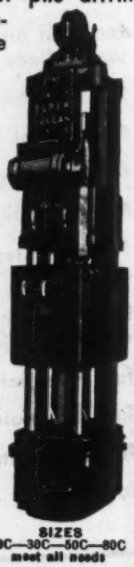

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PUBLIC BLDGS. (Bids Asked, Cont'd.)

Bids Asked November 9

†**Wash., Wenatchee** — Bonneville Power Admin., P. O. Box 3537, Portland, Ore., control house and oil house at Columbia substation, near here, Inv. 3250. Plans deposit $25. Extended date. CD 10/16—ENR 10/19.

Bids Asked November 10

†**Calif., Redwood City**—Federal Works Agency, 2223 Fulton St., Berkeley, nursery school, Calif. 4-643-F. Plans deposit $15. Narbett, Chamberlain & Reynolds, 564 Market St., San Francisco, archts. CD 10/20—ENR 10/26.

†**Mich., Detroit**—E. M. Lane, Bd. Educ., 1354 Broadway Ave., 2 story, bsmnt., brick, rein.-con., steel, stone addn. Mason School, Mich. 20-361-N. $75,941. **FWA.** Plans deposit $25. J. I. Dise, 2631 Woodward Ave., Zone 1, archts. CD 8/24—ENR 8/31.

†**Mich., Eloise**—J. P. Sumeracki, secy. Wayne County Bd. Auditors, 201 County Bldg., Detroit, brick, stone, concrete, steel health clinic bldg., S.W.A. Proj. Mich. 20-369. $150,000. **FWA.** Plans deposit 10. Eberle M. Smith Associates, 13700 Woodward Ave., Highland Park, Zone 3, archts. CD 8/24—ENR 8/31.

Bids Asked November 13

†**Miss., Merrimac**—Pub. Housing Auth., NHA, 201 N. Wells St., Chicago 6, Ill., 350 unit family portable shelter housing, Wis. 47055, 150 unit family portable shelter housing, Wis. 47056. CD 10/27.

Bids Asked November 14

†**Calif., San Bernardino**—Pub. Bldgs. Admin., 18 and F Sts. N.W., Wash., 25, D. C., 40-bed isolation ward addn. at San Bernardino County Hospital, Calif. 4-494. **FWA.** CD 5/3—ENR 5/11.

†**N. J., Long Branch**—Long Branch Housing Authr., 133 Garfield Court, paving playfield, N.J. 3-1, for NHA.

Bids Asked November 15

†**Wash., Spokane** — Rigg & Vantyne, archts., Peyton Bldg., 2 story, bsmnt., brick, concrete nurses' home, for St. Luke's Hospital, N. 330 Summit Blvd. $75,000. **FWA.** Plans deposit $25.

Bids Asked November 16

N. Y., Brooklyn—At office Executive Director Port of New York Authority, 111 8 Ave., New York, Zone 11, storage warehouse and garage at Port of Authority Grain Terminal, foot of Columbia St. at Gowanus Bay, Contr. GT-6. F. C. Ferguson, chn.; adv. ENR 11/2. CD 10/25.

Bids Asked About November 17

†**Calif., Bellflower**—Pub. Bldgs. Admin., 18 and F Sts. N.W., Wash., 25, D. C., 18 classroom school consisting of seven 1 story, wood frame bldgs., Calif. 4-611. **FWA.** Kistner & Wright, Architects Bldg., Los Angeles, archts. CD 8/23—ENR 8/31.

★†**Mich., Hamtramck (br. Detroit)**—Sister Mary Bernardine, 3411 Evaline St., Zone 12, brick, steel, stone, rein.-con. bldg. for Holy Cross Hospital, Mich. 20-342-N, for Sisters of St. Francis, 3411 Evaline St., Zone 12. $625,000. **FWA.** Plans deposit $25. J. C. Goddeyne, Bay City Bank Bldg., Bay City, archt. CD 7-12—ENR 7/20, under Detroit.

Bids Asked November 20

La., Monroe—At office P. A. Poag, city treas., City Hall, Contr. 10, structures, power plant imprvs. $170,000. Burns & McDonnell Engrg. Co., 107 W. Linwood Blvd., Kansas City 2, Mo., engrs.

Bids Asked November 21

†**Calif., Hayward**—Pub. Bldgs. Admin., 18 and F Sts., N.W., Wash., 25, D. C., 2 story, rein.-con. detached bldg addn. to Hayward Union High School, Calif. 4-637-F. $123,200. **FWA.** Dragon & Schmidts, 2068 Allston Way, Berkeley, archts. CD 10/25.

Ind., Peru—Bd. P. Wks. & Safety, 52x76 ft., brick, block glass boiler house, raising, replacing roof on present boiler house, one 10,000 kw. turbo generator, one 130,000 lb/hr 450 lb. bent tube boiler, 20,000 sq. ft. surface condenser, 2 pulverizers. E. E. Phillips, City Hall, 19 E. 3 St., city engr. Bevington, Taggert & Fowler, Inc., 730-739 Indiana Pythian Bldg., Indianapolis, Zone 4, consult. engr.

★†**Pa., Lebanon**—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., hospital bldgs., utilities. $2,000,000. Extended date. CD 9/22—ENR 9/28.

Bids Asked

★†**Tex., Odessa**—United Carbon Black Co., Inc., United Carbon Bldg., Charleston, W. Va., and Odessa, Tex., No. 1 channel type carbon black plant, $310,000; No. 2, channel type carbon black plant, $300,000. Defense Plant Corp. will finance. CD 10/24—ENR 10/26.

LOW BIDDERS

†**Calif., Richmond**—Pub. Housing Auth., NHA, Phelan Bldg., 760 Market St., San Francisco, fire prevention measures on 688 dwelling units, Calif. 4178, from Biltwell Constr. Co., 4745 Geary St., San Francisco, $79,877. Wm. P. Day & Associates, Financial Center Bldg., San Francisco, archts. CD 10/12.

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PUBLIC BLDGS. (Low Bidders, Cont'd.)

†Ga., Marietta—City and Cobb Co., c/o Cobb Co. Comrs., Courthouse, Oct. 24, recreation bldg., from Wesley Constr. Co., 441 Courtland St. N.E., Atlanta, $172,570. R. R. Nash, Marietta, archt. CD 8/30—ENR 9/7.

†Ind., Gary—Mrs. Frankie Helman, trustee Calumet Twp., Lake Superior Court Bldg., 401 Bway., Oct. 23, 1 story, 65x244 ft. Township Junior High School, Ind. 12-218 N, from Superior Constr. Co., 3955 Harrison St., $148,985. FWA. CD 10/10—ENR 10/12.

★†Md., Bethesda (br. Wash., D. C.)—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N. W., Wash., 25, D. C., Oct. 25, research bldg. and animal housing, Naval Medical Center, NOY 9250, from Consolidated Engr. Co., St. Paul and Franklin Sts., Baltimore, $969,000. CD 10/12—ENR 10/19.

†Mass., Roxbury—Pub. Housing Auth., NHA, 34 School St., Boston, Zone 8, Oct. 24, site imprvs., grading, etc., Lenox St. housing, Mass. 2-4, from Baker & Co., 1335 Hyde Park Ave., Hyde Park, $44,887. CD 10/19.

Va., Williamsburg—College of William & Mary, C. Duke, Bursar, Williamsburg, Oct. 12, steam and hot water distr. sys. imprvs., from Raisseler Corp., 129 Amsterdam Ave., New York, N. Y., $119,900. CD 10/17—ENR 10/19.

†Va., Dahlgren — Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., Oct. 25, temperature conditioning bldg., Naval Proving Ground, NOY 10167, from L. T. Turner, 3616 14 St. N.W., Wash., D. C., $72,317.

CONTRACTS AWARDED

†Calif., Mare Island—Pub. Housing Auth., NHA, Phelan Bldg., 760 Market St., San Francisco, filling, grading Calif. 4892N, to H. O. Rutherford & E. E. Lowell, P. O. Box 148, Vallejo. $117,600. CD 10/17—ENR 10/19.

★†Calif., San Pedro—Pub. Housing Auth., NHA, 760 Market St., San Francisco, fabrication, transportation, erection 500 portable family dwelling units, Calif. 4877-A, to Shumaker & Evans, 832 W. 5 St., Los Angeles, $357,642. CD 10/10—ENR 10/12.

★†Calif., Stockton—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave, N.W., Wash., 25, D. C., construct permanent Naval Supply Depot on Rough and Ready Island, 4 mi. from here, Spec. 15093, NOY 10606, to Ford J. Twaits Co., Morrison-Knudsen Co., Inc., and Ben. C. Gerwick, Inc., 451 S. Boylston St., Los Angeles, $10,395,189. CD 10/26.

★†Ia., Des Moines—Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, O., 1, 2 and 3 story, brick, concrete, steel tire plant, to Geo. Sollitt Constr. Co., 109 N. Dearborn St., Chicago, Ill., $1,700,000. Est. $4,500,000 incl. equip. Defense Plant Corp. will finance. Giffels & Vallet, Marquette Bldg., Detroit, Mich., engrs.-archts.

†Kan., Kansas City—Providence Hospital, 18 and Tauromee Sts., c/o Sisters of Charity, Mother M. Francesca, pres., 18 and Tauromee Sts., hospital expansion, Kan. 14-148, to C. A. Kelly, 5300 Cherry St., Kansas City, Mo. $231,864. FWA. Bids 10/10. CD 9/18—ENR 9/21.

†Mo., St. Louis—U. S. Eng., 816 U. S. Courthouse and Customhouse, Zone 2, altering Bldg. 3, St. Louis Ordnance Plant, to Dickie Constr. Co., Louderman Bldg., 317 N. 11 St., Zone 1, $105,646; plumbing, piping, heating and ventilating, in certain bldgs., St. Louis Ordnance Plant, to Thos. J. Sheehan Co., 2233 Olive St., Zone 3, $365,297. Bids 10/13.

†Pa., Brownsville—Park & Tilford Distillery, Inc., W. J. Hossman, res. mgr., 1220 Water St., design and construction plant, to United Engineers & Constructors, Inc., 1401 Arch St., Phila., $335,000. Defense Plant Corp. will finance. Awarded 10/25. CD 10/18—ENR 10/26.

†Utah, Dugway—U. S. Eng., 1209 8 St., Sacramento 5, Calif., boiler plant in Dugway areas 1, 2 and 3, sewer and water facilities for Areas 2 and 3, to Lym Engr. Co., 2683 S. 13 East St., Salt Lake City. Bids 10/16.

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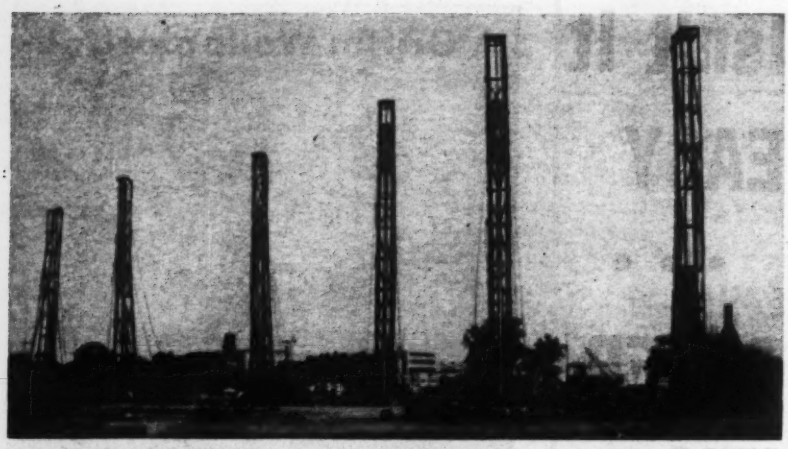

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PUBLIC BLDGS. (Contracts Awarded, Cont'd.)

Que., Huntingdon—Dpt. Munitions & Supply, Ottawa, Ont., central heating plant and equip. at Casualty Retaining Center, to Reid & Cambridge, Ltd., 1223 Greene Ave., Westmount, $68,000.

COMMERCIAL BUILDINGS

PROPOSED WORK

Ala., Gorgas—Alabama Power Co. Alabama Power Bldg., Birmingham, plans by Miller, Martin & Lewis, Title Guarantee Bldg., Birmingham, and bids soon seventy-five 1 story rental houses. $150,000.

N. C., Charlotte—H. B. Meiselman, Independence Bldg., 1 story theatre, 249 S. Tryon St. $250,000. Site purchased.

Tex., Houston—Mensco Corp., 4415 N. Roseneath St., plans by J. Kriestman, 2017 W. Gray Ave., thirty 1 story frame, sheetrock residences, concrete fdns., in Meadowbrook addn. $150,000.

Tex., San Antonio—Meadow View Development Co., Route 3, Box 405 C, 68 frame, sheet rock dwellings. $225,000.

B. C. Vancouver—St. Regis Hotel 1944 Ltd., 416 Roger Bldg., hotel. $150,000

Newfoundland, St. John's—Motion Pictures Supplies, Inc., 7 Preston St., office and apartment block studios, etc. $150,000.

Ont., Niagara Falls—Welland Securities Ltd., c/o C. Findlay, Niagara Falls, housing scheme, Clifton Hill. $200,000.

Ont., Toronto—Y. W. and Y. M. Hebrew Assn., c/o S. Godfrey, 49 E. Front St., association bldg. $150,000.

Ont., Walsh—R. C. Congregation, Rev. J. U. Delhi, Walsh, church and presbytery. $150,000.

Que., Montreal—Caisse Nationale D'Economie, 41 St. James St., dwellings, Lajeunesse St. $150,000.

Que., Quebec City—F. W. Woolworth & Co. Ltd., St. John St., store, corner St. Eustache St. $200,000. Negotiating for site.

Que., St. Hyacinthe—Reverend Dominican Fathers, 5375 Notre Dame de Grace Ave., Montreal, plans by L. Mainguy, 165 Mountain Hill St., Quebec City, 35 x 136 ft., and 40 x 104 ft., both 2 story, bsmnt., rein.-con., stone residences. $175,000.

BIDS ASKED

Bids Asked November 6

Pa., Enola—Pennsylvania R.R., J. L. Greasitt, ch. engr., Broad St. Station Bldg., 1617 Pennsylvania Blvd., Phila., dormitory. $240,000. L. C. Tichy, 369 Lexington Ave., New York 17, N. Y., archt. CD 0/5—ENR 10/12, under Industrial Bldgs.

CONTRACTS AWARDED

★ **Ala., Montgomery** — Shawnee Terrace, Inc., 21 Adams St., eighty-seven 1 story, brick veneer, frame, concrete tile houses, to Daugette & Milligan Co., Gadsden. Est. $500,000. H. Pembleton, 2121 Highland Ave., Birmingham, archt. R. Bell, 201 Magnolia Cir., assoc. archt.

N. J., Hillside—B.H.B. Constr. Co., 162-18 Jamaica Ave., Jamaica, N. Y., Monroe Gardens, 2 story, 160 unit, brick veneer garden apartment bldg., Fabyan Pl., separate contracts. $300,000. B. Braunstein, 163-18 Jamaica Ave., Jamaica, N. Y., archt. CD 9/22—ENR 9/28.

★ **N. J., Irvington**—Stuyvesant Village, Inc., 17 Academy St., Newark, 1 story, brick veneer garden apartment, separate contracts. $600,000. E. Gerber, 367 Fairview Ave., Orange, archt.

INDUSTRIAL BUILDINGS

PROPOSED WORK

Conn., Derby—FACTORY—Sponge Rubber Products Co., Derby, brick, steel factory. $75,000. L. F. Caproni, 1221 Chapel St., New Haven, engrs.

Conn., East Hartford—LABORATORY—Pratt & Whitney Div. United Aircraft Corp., 400 Main St., soon lets contract, 1 and 2 story, 135x140 ft., limestone, brick thermodynamics laboratory. $160,000. Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., engrs.

Ga., Atlanta—PLANT—Atlantic Brewing Co., R. C. Holahan, 247 Courtland St. N.E., repairing plant damaged by fire. $100,000.

Ind., Elkhart—PLANT—Miles Laboratories, Inc., Elkhart, bids soon, brick, rein.-con. pharmaceutical plant addn. $50,000. W. E. Fett, 914 Washington St., Mishawaka, structural engr.

Ind., Hammond—PLANT—Swift & Co., H. W. Ruskamp, in charge of construction, U. S. Yards, Chicago, Ill., sketches, industrial oils and gelatine refining plant on 7½ acre site, Indianapolis Blvd. between 165 and 167 Sts.

La., Lake Charles — PLANT — Calcasieu Frozen Foods Co., Lake Charles, plans by Thomas Bryan & Associates, Lafayette, frozen food locker plant. $40,000.

INDUSTRIAL BUILDINGS (Proposed Work, Cont'd.)

Mass., Jamaica Plain (sta. Boston)—FACTORY—Holtzer-Cabot Electric Co., 400 Stuart St., Boston, plans completed and soon lets contract brick, rein.-con. factory addn., Amory St. Over $40,000. Charles T. Main, Inc., 201 Devonshire St., Boston, engr.

Mass., Newton — FACTORY — Owner, c/o D. Dee Granges, archt., 49 Federal St., Boston, sketches brick factory addn. $40,000.

Minn., Cambridge—PLANT—Rural Cooperative Power Assn., Maple Lake, soon lets contract, brick, tile power plant, furnishing, installing pumps, cooling equip., auxiliaries, $75,000. R. D. Thomas & Associates, 1206 2 Ave. S., Minneapolis, engrs. CD 9/20—ENR 9/28.

Mo., St. Louis—PLANT—Ritepoint Co., A. G. Lipic, 116 S. Grand Blvd., St. Louis, Zone 3, 1 story pencil mfg. plant and office bldg., on 125x180 ft. site, 4400 S. Kingshighway Blvd. Over $40,000 with equip.

N. J., Jersey City—THAWING SHED—Central R. R. Co. of N. J., A. M. Zabriskie, ch. engr., Jersey City Terminal, Zone 2, 1 story, 35x320 ft., cement asbestos board, and frame thawing shed, New York Bay and Communipaw Ave. $65,000.

O., Alliance — PLANT — The Machined Steel Castings Co., Alliance, fdn. for plant. $12,500.

O., Cleveland—LABORATORY—American Gas Assn., R. M. Conner, mgr., 1030 E. 62 St., rebuilding testing laboratory. $40,000.

O., Cleveland—FACTORY, etc.—American Metal Treating Co., J. L. Teegarden, pres., 1035 E. 62 St., rebuilding 2 factory bldgs. and office bldg. $75,000.

Ore., Portland — WAREHOUSE — Railway Express Agency, 635 Folsom St., San Francisco 7, Calif., 2 story warehouse, and altering existing bldg. for loading platform, loading dock, offices, etc. $142,000.

O., Warren — BOILER HOUSE — Taylor-Winfield Corp., T. S. Long, pres.-genl. mgr., Mahoning Ave. N.W., 1 story, 100x123 ft., brick, steel boiler house, boilers, etc. $45,000.

Pa., Bethlehem—FACTORY, etc.—Metal's Reserve Co., 811 Vermont Ave. N.W., Wash., D. C., brick factory and warehouse. $123,386.

Pa., Kane—FOUNDRY, etc.—Moser Mfg. Co., Wilcox Rd., Kane, rebuilding 2 story, basmt., brick, steel, concrete foundry and machine shop. Over $50,000.

Pa., Neville Island (br. Pittsburgh)—PLANT—Pittsburgh Coke & Chemical Co., G. E. Dignam, genl. mgr., Grant Bldg., Pittsburgh, preparing plans chemical plant expansion, special processing equip. and piping, various bldgs. $1,000,000.

Pa., Phila.—PLANT—Ajax Metal Co., Frankford Ave. and Richmond St., rebuilding 2 story, brick, steel, concrete plant. $40,000. M. Ward Easby, Inc., 1201 Chestnut St., engrs.

Pa., Phila.—PLANT—Phila. Dressed Beef Co., Front and Moore Sts., plant addn. $150,000.

Pa., Pittsburgh — WAREHOUSE — North Pole Cold Storage and Ice Co., E. J. Huckstein, pres., 1218 Carson St., and G. Simons, archt., 1453 Barnesdale St., soon lets contract, 1 story, 50x85 ft., concrete block warehouse. $40,000.

Tex., Houston—SHOP—Brown Oil Tool Co., 2214 Campbell St., steel, concrete addnl. shop. $40,000.

Tex., Houston—FREIGHT DEPOT STATION, etc.—International Great Northern R. R. Co., C. S. Kirkpatrick, ch. engr., Union Station, making plans rebuilding freight depot station and loading facilities. $100,000.

Tex., Houston—WAREHOUSE—Universal Carloading & Distr. Co., 106 Austin St., replacing large warehouse, recently destroyed. Over $40,000.

Tex., McAllen — PLANT — Southwestern Sugar & Molasses Co., c/o Chamber of Commerce, McAllen, 1 and 2 story, brick concrete sheet metal dehydration plant bldgs. Over $75,000.

Tex., San Juan — FACTORY — Boehnke Shippers Equip. Co., Tri-Pak Machinery Co., Combes Hys., Harlingen, 1 story, brick, rein.-con. factory bldg. $46,000.

Vt., Montpelier—PLANT—Montpelier Co-operative Freezer Locker, Montpelier, plans by P. R. Webber, Grove St., Rutland, freezer locker plant. $40,000. CD 8/23—ENR 8/31.

Wis., Algoma—FACTORY—Algoma Plywood & Veneer Co., Algoma, warehouse, power plant and machine shop addns.

North West Territories, Yellowknife—DIAMOND DRILLING—Nib Yellowknife, Ltd., Yellowknife, diamond drilling. $40,000.

N. S., Halifax—PLANT—Julius Silverman, Halifax, plant. $40,000.

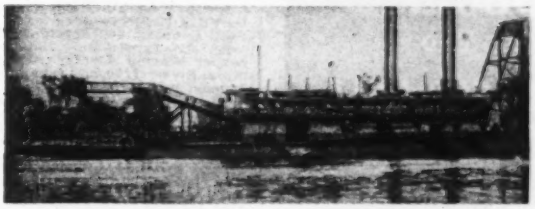
Alta., Lethbridge—PACKING PLANT—Lethbridge Co-operative Abattoir, Ltd., c/o W. F. Russell, Lethbridge, packing plant. $40,000.

B. C., Ladner—COLD STORAGE—Delta Cold Storage Ltd., 7 Trunk Rd., Ladner, cold storage plant.

B. C., Vancouver—PLANT—Crofton Mineral Wool Ltd., 678 Howe St., mineral wool, rock wool products mfg. plant. $50,000.

B. C., Vancouver—PLANT—Mid City Industries Ltd., 470 Granville St., metal finishing plant, etc. $40,000.

DREDGING



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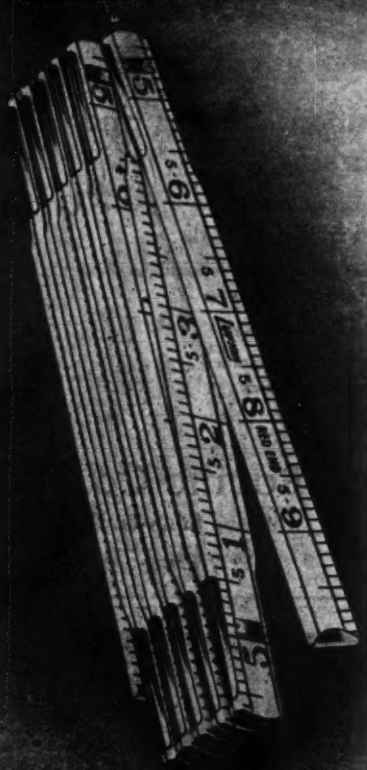

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INDUSTRIAL BUILDINGS (Proposed Work, Cont'd.)

N. B., Moncton—BAKERY—Eastern Bakeries Ltd., 14 St. George St., bakery. $40,000.

N. B., St. Stephen—FACTORY—Walter W. Quartermain, St. Stephen, canning factory and biscuit factory. $40,000.

North West Territory, Coppermine—MINE DEVELOPMENT—American Metal Co., Inc., Coppermine, developing mines, necessary structures, and diamond drilling, in copper bearing country adjacent to Coppermine River. $200,000 (available). Dr. C. P. Jenney, c/o owner, engr.

Northwest Territory, Yellowknife—MINING DEVELOPMENT—Giant Yellowknife Mines, Ltds., Yellowknife, N. W. T., and 80 W. King St., Toronto, Ont., developing mining property, erecting pre-fabricated bldgs., dwellings for employees and roadway linking property to Yellowknife Airport, diamond drilling and shaft sinking. $150,000.

North West Territory, Yellowknife—DIAMOND DRILLING—Nash Yellowknife Gold Mines, Ltd., Yellowknife, diamond drilling program, on 450 acre site. $50,000.

Ont., Clarence Creek—PLANT—La Co-operative Laitiere de Clarence Creek, Clarence Creek, dairy products plant.

Ont., Galt—PLANT—H. Lunenfeldt & Son Ltd., 200 Beverley St., remodeling plant. $40,000.

Ont., Grande Ligne—PLANT—La Co-operative Laitierede la Grande Ligne, Grande Ligne, dairy products plant. $40,000.

Ont., Kenora—DIAMOND DRILLING—Heyson Red-Lake Gold Mines, Ltd., Kenora, diamond drilling. $50,000.

Ont., Kincardine—PLANT—Circle Bar Knitting Co., Ltd., Kincardine, 4 story, bsmnt., 60 x 100 ft., steel, brick, plant exten., concrete fdn. $55,000.

Ont., Michipicoten Harbour—PLANT—Algoma Oil Properties, S. J. Kidder, mgr., Michipicoten Harbour, installing sink and float plant to handle oil at New Helen Mine, near here. $250,000.

Ont., Port Arthur—GRAIN ELEVATOR—Alberta Wheat Pool, Loughland Bldg., Calgary, Alta., grain elevator addn. $40,000.

Ont., Richmond—MILL—Laurentian Flax Products Co. Ltd., Richmond, fibre mill and flax storage bldg. $60,000.

Ont., Scarborough—PLANT—Fred Oldfield, Ltd., c/o Fred Oldfield, Scarborough, chocolate, cocoa, confectionery, etc., mfg. plant. $40,000.

Ont., Toronto—PLANT—Hillside Vinegars Co., Ltd., c/o W. R. Binch, 38 W. King St., vinegars, extracts, jams, etc., mfg. plant. $40,000.

Ont., Toronto—PLANT—Beaver Lamb & Shearing Co. Ltd., c/o B. Luxenberg, 100 W. Adelaide St., dressing, dyeing, tanning plant. $40,000.

Ont., Toronto—PLANT—Emark Industries, Ltd., c/o L. Yoerger, Victory Bldg., sound reproducing apparatus equip., accessories, etc. mfg. plant. $40,000.

★**Ont., Toronto**—PLANT—Hydro Electric Power Comn. of Ontario, 620 University Ave., 2 bldgs. at Essex transformer station near Walkerville Junction. $50,000. Total est. $965,000 with equip.

Ont., Toronto—PLANT—Kurly Kate Canada, Ltd., c/o A. Singer, 100 W. Adelaide St., metal sponge and filter etc., mfg. plant. $40,000.

Ont., Toronto—PLANT—Luscoe Products Ltd., c/o J. Callahan, Confederation Life Bldg., chemical and pharmaceutical products mfg. plant, etc. $40,000.

Ont., Toronto—PLANT—Steel Electric Fittings, Ltd., c/o S. Cohen, 465 Bay St., plant for manufacturing apparatus, machinery, etc., for all types of electric current. $40,000.

Ont., Wawa—SINK and FLOAT PLANT—Algoma Ore Properties, Ltd., Sault Ste. Marie, installing sink and float plant to handle ore before it goes to the crusher. $150,000.

★**Ont., Windsor**—PLANT—Chrysler Corp. of Canada, Ltd., 300 Tecumseh Blvd. E., soon lets contract, exten. Plant 3, $500,000 Hutton & Souter, 36 James St. S., Hamilton, archts.

Que., Lachute—FACTORY—Cine-Nite Enterprises, Ltd., Lachute, factory. $40,000.

Que., Lamaque—MINING, etc.—Lamaque Gold Mines, Ltd., Lamaque, shaft and essential mining bldgs. $60,000.

Que., Laprairie—FACTORY—St. Laurence Wood Heel Reg., Laprairie, factory. $40,000.

Que., Levis—Canadian Brassiere Inc., brassiere, girdle, brace mfg. plant. $40,000.

Que., Montreal—PLANT—Dufresne & Brother, 3564 Dersery St., wooden toy mfg. plant. $40,000.

Que., Montreal—FACTORY—Empire Fabrics Reg., 366 Mayor St., factory. $40,000.

Que., Quebec City—PLANT—Farmers Co-op. Syndicate, 89 Bagot St., dairy products plant. $40,000. E. Langevin, 513 E. Rachel St., Montreal, engr.

Sask., Regina—WAREHOUSE—Smeed's Security Storage, H. C. McElroy, mgr., 6 Ave., warehouse. $50,000.

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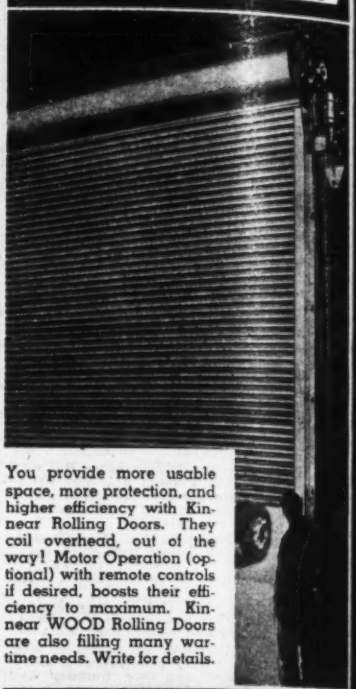

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INDUSTRIAL BLDGS. (Cont'd.)

BIDS ASKED

Bids Asked November 6

Colo., Denver—PLANT—Inland Paper Box Co., 1431 Waxie St. 1 story, part bsmnt., 248x 295 ft., brick, mill mfg. plant. $250,000 or more. R. L. Linder, Insurance Bldg., archt.

Colo., Denver—DIESEL SERVICE—Chicago Burlington & Quincy R.R. Co., H. R. Clarke, ch. engr., 547 W. Jackson Blvd., Chicago, Ill., 2 story, bsmnt., 42x150 ft., brick, concrete, steel diesel service bldg. adds. CD 8/17—ENR 8/19.

Bids Asked November 8

Ont., Toronto—STORAGE—H. G. Duerr, archt., 10 Lumsden Bldg., general contract for storage bldg., Davenport Rd., for James K. Maguire. (Creeds Storage Vaults) 568 Melrose Ave. $55,000. CD 5/9—ENR 8/9.

Bids Asked In Late November

Conn., Derby—FACTORY—Sponge Rubber Products Co., Howe Ave., brick, steel factory, incl. conveyor chutes, etc. $75,000. L. F. Caproni, 1221 Chapel St., New Haven, engr.

Bids Asked Middle Of December

Colo., Denver—DIESEL SHOP—Chicago, Burlington & Quincy R.R. Co., H. R. Clarke, ch. engr., 547 W. Jackson Blvd., Chicago, Ill., 72x272 ft., steel, brick diesel shop.

Bids Asked

Mass., Springfield—MILL—General Webbing Corp., 235 Mill St., brick mill, Mill St. $50,000. James H. Bigelow & Associate, 14 Irvington Sq., archts.

Tex., Carthage—PLANT—Rogers Lacy, Longview, Arkansas-Louisiana Gas Co., Slattery Bldg., Shreveport, La., and Continental Oil Co., Eagle Ford Rd., Dallas, 100,000,000 cu. ft. daily cap. butane gas and gas products plant. $1,500,000. CD 5/31—ENR 6/8.

Tex., Corsicana—PLANT—Bethlehem Steel Co., Bethlehem, Pa., and Corsicana, expan., magnesia mfg. plant. $40,000. CD 8/9—ENR 8/17.

Tex., Waco—GLASS SMELTING FURNACE—Owens Illinois Glass Co., Waco, glass smelting furnace. $587,000. CD 10/24—ENR 10/26.

CONTRACTS AWARDED

Calif., Bakersfield — REFINERY, etc.—Ohio Oil Co., 437 S. Hill St., Los Angeles, gasoline refinery and cycling plant, incl. power plants, distillation area, production area, etc., to Fluor Corp., 2500 Atlantic Blvd., Los Angeles, over $500,000.

Ill., Chicago—WAREHOUSE—Ekco Products Co., 1949 N. Cicero Ave., 1 story, 268x448 ft., brick warehouse, to Henry Ericson Co., 228 N. La Salle St. Est. $225,000. Alschuler & Friedman, 28 E. Jackson Blvd., archts.

Ill., Chicago Heights—PLANT—American Manganese Steel, Chicago Heights, 1 story, brick, steel, concrete welding rod and motor generating plant, to Campbell-Lowrie-Lautermilch, 400 W. Madison St., Chicago, $50,000.

Md., Baltimore—PLANT—Henschein, Evarts & Crombie, archts., 59 E. Van Buren St., Chicago, Ill., beef killing plant for Schluderburg Kurdle Co., Baltimore and Eaton Sts., to Consolidated Engineering Co., 30 E. Franklin St. $250,000. Bids 10/4. CD 9/28—ENR 9/28.

Mass., Boston—SHOP, etc.—New York, New Haven & Hartford R. R. Co., E. E. Dyatt, ch. engr., Water St., New Haven, Conn., 2 story, 20x115 ft., brick air conditioning shop, Foundry St., and 1 story, 40x183 ft. brick, concrete fan yard bldg., etc., to Frodenick-Billings Co., 19 High St. Est. $46,000 each. Bids 10/17 and 10/18 respectively. CD 10/13 and 10/12—ENR 10/19 respectively.

Mass., Worcester — FACTORY—Reliance Div. Detroit Steel Co., 62 Lincoln St., 1 story, 62 x 310 ft., steel, masonry factory addn., alterations, to Austin Co., 19 Rector St., New York, N. Y. Est. $65,000.

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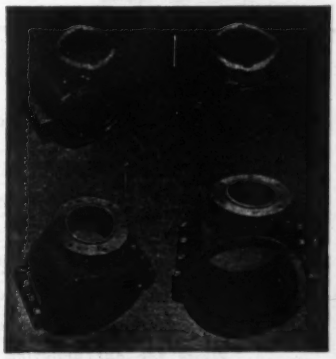

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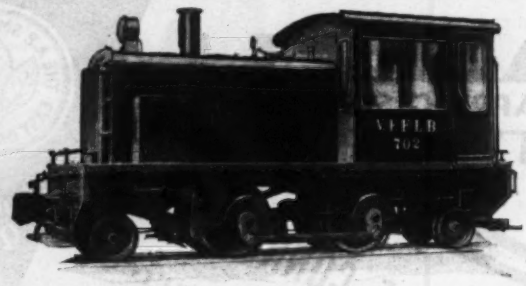

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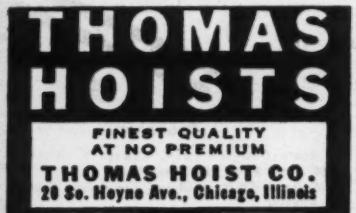

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INDUSTRIAL BLDGS. (Contracts Awarded; Cont'd.)

Mo., St. Louis—PLANT—Maurice J. Noveson, 7501 Wayne Ave., Zone 5, 1 story, brick, concrete, steel plant on site fronting 200 ft. on Southwest Ave. by depth of 515 to 694 ft. to Missouri Pacific tracks at rear Southwest Ave., to J. S. Alberici Constr. Co., Boatmen's Bank Bldg., Zone 1. Est. $187,675. B. F. Goodrich Co., 1058 S. Vandeventer Ave., Zone 10, lessee.

Mo., St. Louis—PLANT—St. Louis Briquette Co., 4004 Chouteau Ave., Zone 10, 54 x 102 ft., second story briquette mfg. plant addn., 3850 Chouteau Ave., to Stauder Constr. Co., 6101 Adkins Ave. Est. $40,000 with equip. P. M. O'Meara & Associates, 4305 Delmar Blvd., Zone 8, archts.

N. J., Clifton—STORAGE PLANT—Hoffmar-LaRoche, Kingsland Rd., Nutley, 1 story, 100 x 175 ft. vitamin storage plant, poured concrete, structural steel, brick faced, to White Const. Co., 95 Madison Ave., New York, N. Y., $50,000. CD 10/17—ENR 10/19.

N. J., Clifton—GARAGE—Koppers Co., 501 Getty Ave., 1 story, 77 x 205 ft., brick, stone garage, to Weny Bros. & Storms Co., 241 Lafayette St., Paterson, $76,000. Baldino & Ganon Co., 631 Main Ave., Passaic, engr.-archt.

N. J., Harrison—PLANT—Crucible Steel Co., S. 4 St., 1 story, 30 x 230 ft., brick, steel addn. Bldg. 120, to Harry E. Nonemaker, 16 Bleeker St., Newark, $60,000. CD 10/16—ENR 10/12.

N. J., Livingston—PLANT—Ernest Water Column & Gage Co., 250 S. Livingston Ave., 2 story, cinder block, brick veneer mfg. plant addn., to Daniel J. Cronin, Inc., 717 S. Orange Ave., Newark, $45,000. Bids 9/28. CD 9/22—ENR 9/28.

N. J., Newark—BARRELL HOUSE—G. Krueger Brewing Co., 75 Belmont Ave., 1 story, 100 x 125 ft., rein.-con. barrel house, to Wigton-Abbott Corp., 1225 South Ave., Plainfield, $100,000. Lockwood-Greene, 10 Rockefeller Plaza, New York, N. Y., archts.

N. J., North Brunswick (P. O. New Brunswick)—PLANT—Industrial Tape Corp., 500 George St., New Brunswick, 1 story, 300 x 200 ft., structural steel mfg. plant addn., Hy. 25, to Rule Const. & Repair Co., 383 George St., New Brunswick, $75,000.

N. J., Paterson — LAUNDRY — Prospect Park Laundry 371 N. 11 St., 1 and 2 story, concrete block laundry addn., to Visbeen Const. Co., Wyckoff Ave., Midland Park, $40,000. Bids 10/21. CD 10/17—ENR 10/19.

Ont., Long Branch (Postal Dist. Toronto)—FACTORY—Sherwin-Williams Co. of Canada, Ltd., 2875 Centre St., Montreal, Que., paint factory. $75,000.

Ore., Portland—WAREHOUSE—American Steel Warehouse, Inc., 920 N.E. Glisan St., 125x200 ft., concrete warehouse. E. Flanders and S Sts., to A. J. Bingham & Son, Couch Bldg. Est. $75,000. E. Cash, 161 S.W. Spring St., archt.

O., Sandusky—SHOP, Etc.—Pennsylvania R. R. Co., C. I. Leiper, ch. engr., Pennsylvania Station, Pittsburgh, Pa., 1 story, 35 x 160 ft., concrete block shop and storehouse exten., to Cunningham-Rudy Co., 3037 W. Grand Blvd., Detroit, Mich. Est. $40,000.

Pa., Bridgewater — BAKERY—Keystone Baker, Inc., L. H. Braun, pres., Market St., 2 story, 40 x 125 ft., brick, steel, frame bakery addn., to Cook Anderson Co., 5 and Insurance Sts., Beaver. Est. $40,000. W. E. Long Co., 155 N. Clark St., Chicago, Ill., archt. CD 9/18—ENR 9/21.

Pa., Conshohocken — PLANT — Carlile & Doughty, Conshohocken, plant, to H. P. Schneider, 3713 York Rd., Phila., $75,000.

Pa., Erie—FACTORY—National Organ Supply Co., 1617 Cascade St., design and construct 1 story, 72 x 152 ft., and 16 x 40 ft., brick factory addn., to Gilmore, Carmichal & Olson Co., 1873 E. 55 St., Cleveland, O. Est, $40,000.

Pa., Phila. — PLANT — Bachman Bros., 1420 E. Erie Ave., mfg. bldg., to A. Raymond Raff Co., 1635 Thompson St., $50,000. Awarded 10/24. A. Schulze, 10 S. 13 St., engr.

Pa., Phila.—MANUFACTURING—J. G. Brill Co., 62 St. and Woodland Ave., mfg. bldg., to C. H. Schwertner, 1220 Hamilton St., $50,000. Awarded 10/25.

Pa., Phila.—WAREHOUSES, etc.—Philadelphia Transportation Co., Broad and Locust Sts., warehouses, bldg. addns., trolley terminal and branch terminal bldgs., to Henry E. Baton, Inc., 1717 Sansom St. and Rafferty-Kennedy Co., Broad and Jerome Sts. Est. $250,000. Awarded 10/4.

Pa., Phila.—LABORATORY—Wyeth, Inc., 2536 N. Broad St., experimental laboratory, 2536 N. Broad St., to Turner Constr. Co., 1500 Walnut St., $325,000. Awarded 10/22.

Pa., Spring Mill (P. O. Conshohocken)—FACTORY—Lee Tire & Rubber Co., Spring Mill, 2 story, brick, steel factory, also addn. to Stoffet & Tellotson, 2043 Eastburn Ave., Phila., $75,000. CD 9/28—ENR 10/5 under Conshohocken.

★**Tex., Port Neches**—PLANT—Glen H. McCarthy, Inc., et al, Sterling Bldg., Houston, natural gasoline plant, to Stone & Webster, Inc., 49 Federal St., Boston, Mass. and Esperson Bldg., Houston, approx. $650,000. Est. $500,000. CD 10/26.

INDUSTRIAL BLDGS. (Contracts Awarded, Cont'd.)

Wis., Green Bay—FERTILIZER PLANT—Wisconsin Coop. Farm Plant Foods, 18 S. Thornton Ave., Madison, 1 story, 105 x 224 ft., steel fertilizer mfg. bldg., to Baker Constr. Co., Columbus Bldg. Feldhausen & Coughlen, Columbus Bldg., archts.

Wis., Milltown—FEED MILL—Milltown Cooperative Produce & Shipping Assn., concrete, brick feed mill, to T. E. Iberson Co., 300 Corn Exchange Bldg., Minneapolis, Minn. Est. **$45,000.**

Wis., Milwaukee—FACTORY—Badger Meter Co., 2371 N. 30 St., Zone 10, 3 story, 78x120 ft., brick, rein.-con. factory addn., to Selzer-Ornst Co., 6222 W. State St., Wauwatosa, Zone 13. Est. **$50,000.** Eschweiler & Eschweiler, 730 E. Mason St., Zone 2, archts.

Wis., Sheboygan—DAIRY—Verifine Dairy Products Co., 936 N. Water St., concrete work for fdn. for 1 story, 75 x 120 ft., brick, rein.-con., steel dairy bldg., concrete and wood piling fdns., to J. Houmes, 813 St. Clair Ave.; piling work by own forces. E. A. Strubenranch, 708 Erie Ave., archt.

Ont., Baden—PLANT—Dominion Linseed & Oil Co. Ltd., J. Lotentz, mgr., Baden, 3 story, 40 x 60 ft. and 60 x 70 ft. L-shaped steel, brick, tile, plant addns., concrete fdns., to O. Wiles, 5 Maurice St., Kitchener, about **$10,000.**

Ont., Eganville—COLD STORAGE, etc.—Eganville Creamery, John St., cold storage and garage, to M. Sullivan & Son, Ltd., Arnprior Richards & Abra, 55 Metcalfe St., Ottawa, archts.

Que., Kenogami—PLANT—Price Bros. Co. Ltd., Price Bldg., Quebec City, brick, rein.-con., steel screen, cumulator and Knotter bldgs., concrete pile fdns., at Riverbend Paper Mill, to E. G. M. Cape & Co. Ltd., 420 Cathcart St., Montreal, about **$300,000.** CD 7/19—ENR 8/3.

Sask., Borden—GRAIN ELEVATOR—National Grain Co. Ltd., Grain Exchange Bldg., Winnipeg, Man., grain elevator, day labor. **$40,000.**

UNCLASSIFIED

PROPOSED WORK

★**†Calif., San Pedro**—DRY DOCK, etc.—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., installing 18,000 ton dry dock and berthing facilities and general construction, Los Angeles Shipbuilding and Dry Dock Corp. Plant, Nobs 1708. **$1,000,000.**

†Colo., Pueblo—SPRINKLER SYSTEMS—U. S. Eng., 909 17 St., Denver, Oct. 26, automatic sprinkler sys., Pueblo Ordnance Depot, from Grinnell Co., 914 Central St., Kansas City, Mo., **$404,924.** CD 10/3—ENR 10/5.

†Conn., Stratford—AIRPORT—City, J. McLevy, mayor, City Hall, bids soon runway lighting project, incl. 53,000 ft. cable, lights, airport. $45,000. CAA.

Louisiana—WHARF—J. H. Lawvor, Sr., Cameron, timber pile wharf addn., Calcasieu Pass, left descending bank, central to point about 170 ft. downstream from ferry landing at Cameron, approx. 3 mi. above mouth of waterway in Cameron Parish.

Louisiana — TRANSMISSION LINES — Louisiana Power & Light Co., 142 Delaronde, Algiers, New Orleans, aerial crossing for electric power transmission lines, over and across Bayou Terrebone, Terrebone Parish.

†La., Hammond—BOMBING TARGETS—U. S. Eng., 25 St. and Avenue F, Galveston, Tex., practice bombing targets, Hammond Airfield. Over $25,000.

†La., New Orleans—PORT FACILITIES—U. S. Eng., Avenue F and 25 St., Galveston, Tex., embarkation port facilities. $150,000.

Minn., Redwood Falls—AIRPORT—City, F. B. Forbes, clk., voted $69,000 bonds, 1st stage airport development, incl. runways. $100,000. Bids this winter for grading. P. C. Bettenburg & Co., 1437 Marshall Ave., St. Paul, engrs. CD 7/6—ENR 7/13.

Missouri — RURAL ELECTRIC LINES — Howard Electric Co-operative, Fayette, short extens. to rural electric lines in district. $25,000. REA allot.

Missouri — RURAL ELECTRIC LINES — Sac-Osage Electric Co-operative, El Dorado Springs, 100 mi. addnl. rural electric lines in Cedar, Dade, St. Clair and Vernon Counties. $130,000 REA allot.

†Neb., Sidney—FIRE WALLS, etc.—U. S. Eng., 909 17 St., Denver, Colo., Oct. 27, constructing firewalls for warehouses, from Loren Hancock, 3806 Dey Ave., Cheyenne, Wyo., **$98,137;** automatic sprinkler sys. in 11 type O-S 1 warehouses and 10 WH-6 warehouse, from Automatic Sprinkler Corp. of America, 1207 Grand Ave., Kansas City, Mo., **$321,052.**

Oklahoma—RURAL ELECTRIC LINES—Northfork Electric Cooperative, Sayre, rural electric lines, Beckham Co. $85,000. REA allot. C. H. Guernsey, Petroleum Bldg., Oklahoma City, engr. CD 10/24—ENR 10/26.

Pennsylvania — PIPELINE — Allentown-Bethlehem Gas Co., F. B. Hofft, vice pres., Broad and Arch Sts., Phila., 10 in. pipeline between Bethlehem and Easton. $250,000.

UNCLASSIFIED (Proposed Work, Cont'd.)

★**Tennessee and Alabama**—NATURAL GAS PIPELINE SYSTEM—Alabama-Tennessee Natural Gas Co., Florence, Ala., approx. 66 mi. 10¾ in. transmission pipeline originating at point of connection with pipeline of Tennessee Gas and Transmission Co., near Enville, Tenn. and exten. to plant of Reynolds Metal Co., near Muscle Shoals, Ala. $1,350,186.

Tex., Beaumont—HANGAR—Comrs. Jefferson Co., Court House, rejected bids Oct. 9, 140x200 ft. hangar with 16x100 ft. doors at each end. CD 9/25—ENR 9/28.

B. C., Chemainus — WHARF — Victoria Lumber Co. Ltd., Chemainus, wharf on shore line of Horse Shoe Bay. $40,000.

Newfoundland, Grand Bank — RECONSTRUCTING PIER, etc.—Municipality, reconstructing government pier and breakwater, also constructing retaining and stone walls on streets which gird each side Grand Bank Brook to obviate flooding. $50,000.

Newfoundland, Grand Bank — STREET LIGHTING SYSTEM—Municipality, street lighting sys. throughout town. $30,000.

North West Territory, Coppermine—DOCKAGE FACILITIES, etc.—American Metal Co. of Canada, Ltd., Coppermine, dockage facilities, storage. $150,000.

N. S., Bridgewater — WHARF — Smith & Rhuland, Bridgewater, wharf. $40,000.

Ont., St. Catherines—RADIO STATION—Niagara District Broadcasting Co. Ltd., c/o E. H. Lancaster, St. Catherines, radio station. $50,000.

Ont., Sarnia — COMFORT STATION — Municipality, M. D. Stewart, clk., plans by N. B. Forbes, 197 N. Christina St., comfort station. $25,000.

Ont., Toronto — SWIMMING POOL — Beaches Lions Club, c/o H. E. McCallum, Lions Club, swimming pool, east end of city. $40,000.

Que., Acton Vale—TOURIST CAMP—La Colonie de Vacances d' Acton Vale, summer tourist camp. $50,000.

★**Que., Montreal** — STREET LIGHTING SYSTEM—Municipality, J. A. Mongeau, city clk., street lighting sys. extens. $1,000,000. H. A. Gibeau, City Hall, engr.

Que., Sherbrooke—GAS MAIN—Municipality, A. Deslauriers, city clk., gas main across St. Francis River. $30,000. J. C. Cote, City Hall, engr.

BIDS ASKED

Bids Asked November 6

†Md., Patuxent River (br. Wash. D. C.)—AIR STATION BLDG.—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash. 25, D. C., recreation bldg. at Naval Air Station, Spec. 15358, NOY 11006. CD 10/9.

Bids Asked November 7

†Ga., Augusta—AUTOMATIC SPRINKLER SYSTEM—U. S. Eng., Post Office Bldg., Savannah, automatic sprinkler sys. for laundry, Oliver General Hospital, Oliv. 12-45.

Bids Asked November 8

La., Lake Charles—ATHLETIC FIELD—John McNeese Junior College, Lake Charles, athletic field. Plans deposit $10. C. Fletcher Tuttle, purch. agt. Dunn & Quinn, Lake Charles, archt.

Bids Asked November 10

Texas — ELECTRIC LINES — Stamford Electric Cooperative, Inc., Stamford, 53 mi. electric lines, Jones and Haskell Counties. $35,000. Freese & Nichols, Capps Bldg., Fort Worth, engrs.

Bids Asked November 14

N. C., Jacksonville—SUBSTATION, etc.—Jones-Onslow Electric Membership Corp., Jacksonville, substation and transmission line. Tentative date. L. E. Wooten, 336 S. Salisbury, St., Raleigh, engr.

Bids Asked November 15

S. C., Pinopolis and Conway—SUBSTATION—Pub. Serv. Auth., 1246 Main St., Columbia, 115 KV substation, consisting 2,500 KVA transformer, one 33 oil circuit breaker, with necessary switches, appurtenances, structures. Hy. 701, approx. 3 mi. south of Conway. Plans deposit $10.

B. C., Quesnel—RADIO BLDG., etc.—A. H. McKee, Dpt. Transport, Ottawa, Ont., radio bldg., transmitter station, power house, garage, residences, etc., for Dominion Government, Ottawa. $100,000.

Bids Asked

†Mass., Fort Devens—NIGHT LIGHTING SYSTEM—U. S. Eng., Fort Devens rehabilitating night lighting sys. at airfield.

★**Texas**—GAS PIPELINE—Lone Star Gas Co., 1915 Wood St., Dallas, 16- to 20-in. gas pipeline carrier between Trinidad plant and Carthage fields, $1,500,000. CD 10/18—ENR 1/26.

Texas — PIPELINE CARRIER—Tennessee Gas & Transmission Co., P. O. Box 2511, Houston, 200 mi. 16- to 20-in. natural gas pipeline carrier exten. $450,000 or more. CD 9/21—ENR 9/28.

LOW BIDDERS

†Ariz., Yuma—BURST CONTROL RANGES—U. S. Eng., 751 S. Figueroa St., Los Angeles 14, Calif., Oct. 23, burst control ranges, appurtenances, Army Air Field, No. 42, from Donaldson Constr. Co., 727 W. 7 St., Los Angeles, Calif., **$83,849.**

†Utah, Wendover — HANGARS — U. S. Eng., 1209 8 St., Sacramento 8, Calif., Oct. 24, prefabricated steel hangars, utilities and service apron, Wendover Army Air Base, Spec. 969, from Christianson Bros. & L. A. Young Constr. Co., 502 Templeton Bldg., Salt Lake City, **$234,570.**

Wisconson—RURAL ELECTRIC LINES—Columbus Rural Electric Co-operative, Columbus, Oct. 20. 41 mi. electric distr. sys., Wis. 5-4031-C3, Columbia Co., from Dutton Electric Co., Inc., 8532 A. W. Schlinger Ave., West Allis, Zone 14, **$39,723.** CD 10/10—ENR 10/12.

CONTRACTS AWARDED

Ala., Prattville — DAM — Continental Gin Co., Prattville, imprv. river dam, to Dunn Constr. Co., 419 First National Bank Bldg., Birmingham. Est. **$60,000.** Polk, Powell & Hendon, C C Bldg., Birmingham, engrs.

★**†Calif., Hunters Point** — PIERS, etc. — Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., pier construction, Naval Dry Docks, NOY 10374, to Gerwick, Morrison-Knudsen & Twaits, 112 Market St., San Francisco, **$1,676,965.** CD 10/3, under LB.

†Calif., Santa Maria—HANGAR, etc.—U. S. Eng., 751 S. Figueroa St., Los Angeles, Zone 14, maintenance hangar, etc., Army Air Field, No. 39 to J. F. Cummins, 245 E. Olive St., Burbank, **$67,000.** Bids 10/13.

†Florida — RECREATION FACILITIES—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., recreation facilities at 6 Naval Auxiliary Air Stations, NOY 9506, to Dyson & Co., Pensacola, **$119,800.**

†Ind., Bunker Hill — LANDING MAT MAINTENANCE—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., landing mat maintenance, Naval Air Station, NOY 10940, to Mohr Constr. Co., Inc., 1420 S. Union St., Kokomo, **$40,174.**

†Ia., Sioux City — CONTROL TOWER — U. S. Eng., 1709 Jackson St., Omaha, Neb., steel control tower, to Olson Constr. Co., 410 S. 7 St., Lincoln, Neb., **$25,500.**

†Kan., Kansas City—SPRINKLER SYSTEM—U. S. Eng., 10 E. 17 St., Kansas City, Mo., installing sprinkler sys. in 14 warehouses and auxiliary bldgs., incl. 600 tons steel pipe and 40,000 sprinkler heads, Air Supply Depot, to Sheahan & Degan, 1014 Kansas Ave., Topeka. **$488,870.**

Missouri, Illinois and Indiana — TELEPHONE CABLE LINE—Southwestern Bell Telephone Co., 1010 Pine St., St. Louis 1, Mo., 177 mi. underground long distance telephone cable line between St. Louis, Mo. and Terre Haute, Ind., own forces. Over **$100,000.**

N. J., Caldwell—TAXIWAYS, etc.—Wright Aeronautical Corp., Fairfield Rd., paving taxiways and warm-up aprons at experimental flight test hangar, to Geo. M. Brewster & Son, 275 W. Fort Lee Rd., Bogota, **$35,000.**

Okla., Oklahoma City — NATURAL GAS LINES—Peppers Gasoline Refining Co., 1 st Natl. Bldg., Oklahoma City, natural gas gathering lines. Owner builds. **$40,000.**

Pa., Phila.—PARK BLDGS.—Phila. Amer. League Baseball Club, 21 St. and Lehigh Ave., bldg. addns., alterations at Shibe Park, to McClain & Co., 1516 Summer St., **$100,000** or more. Awarded 10/15.

Pa., Phila.—TROLLEY LOOPS, etc.—Philadelphia Transportation Co., G. L. Herzog, purch. agt., Locust and Broad Sts., 2 trolley loops, 2 trolley stations, 2 rest rooms, own forces. **$150,000.**

Pa., Richeyville — BATHHOUSE, etc. — Jones & Laughlin Steel Corp., F. W. Ochsenhirt, purch. agt., 3 and Ross Sts., Pittsburgh, general contct 1 story, 64 x 74 ft., brick bathhouse, 35 x 36 ft. boiler house, to Brownsville Const. Co., Coal Rd., Brownsville. Est. **$100,000.**

†Tex., Laredo—AIRPLANE WASH RACK AND FACILITIES—U. S. Eng., Fort Sam Houston, large airplane wash rack and facilities, 4,000 sq. yd. 6 in. concrete paving, water and other utilities, etc., to W. H. Stanley, American Hospital & Life Bldg., San Antonio, **$25,000.** CE 10/19—ENR 10/26.

B. C., Comox—AIRPORT—Dpt. Transport, Ottawa, Ont., addnl. airport development, grading, drainage, hardsurfacing, to General Const. Co., Ltd., Granville Island, Vancouver. About **$150,000.**

N. B., Pennefield Ridge—RADIO RANGE FACILITIES, etc.—Dpt. Transport, Ottawa, Ont., radio range facilities, incl. 3 staff residences, garage, clearing, grading, lighting, range bldg., fencing, etc., at airport, to Diamond Const. Co. Ltd., Fredericton, about **$48,000.**

N. S., Halifax—SHED—Executive Secy., c/o National Harbour Bd., West Block, Ottawa, Ont., reconstructing 3 story, 87 x 264 ft. Shed 21, to Atlas Const. Co., Ltd., 679 Belmont St., Montreal, Que., about **$50,000.** Bids 10/16. CD 10/5—ENR 10/12.

Proposal Advertisements see p. 164
Postwar Projects see p. 124

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OFFICIAL PROPOSALS

Bids: Nov. 16 (315)

Storage Warehouse and Garage

THE PORT OF NEW YORK AUTHORITY
GRAIN TERMINAL
CONTRACT GT-6

Sealed proposals for a storage warehouse and garage at the Port Authority Grain Terminal, Foot of Columbia Street at Gowanus Bay, Brooklyn, N. Y., will be received at the office of the Executive Director of The Port of New York Authority, Number 111 Eighth Avenue, New York 11, N. Y., until 10:30 o'clock, on the morning of Thursday, November 16 1944, and thereafter in the Auditorium of the Authority at the same address until 11:00 A. M., on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer, The Port of New York Authority, Room 1538, 111 Eighth Avenue, New York City, and copies will be furnished upon deposit of $10.00 per set. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
FRANK C. FERGUSON,
Chairman.

New York, November 2, 1944.

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